

# AMERICAN ARTISAN

APRIL 1954

Warm Air Heating  
Residential Air Conditioning  
Sheet Metal Contracting

## FEATURES THIS MONTH

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• **SHEET METAL SHOP** shows potential customers what it can do by refurbishing its own office and furniture ... page 62

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• **RECENT CONVENTIONS** stress sales techniques and business management, installing and servicing, cooling market potentials ... pages 68, 95, 107

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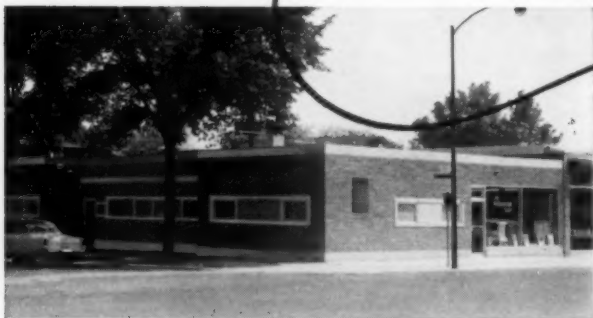




*When it came  
to heating . . .*



*different  
furnace dealers*

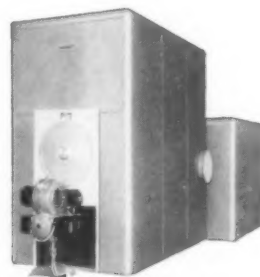


*met different  
heating conditions*

*by installing dependable  
J-C WARM AIR FURNACES!*

An apartment building in Michigan; a school athletic building in Iowa; a medical clinic in Illinois . . . one thing they all need is dependable heat and ventilation. That's why JACKSON & CHURCH POWERATED FURNACES from the large and complete J-C line were chosen. J-C warm air furnaces and ventilating systems are dependable!

*You, too, can install these time-proved furnaces with confidence. Contact the J-C distributor in your area or write for further information.*



*Powerated Oil Furnace*

**There's a J-C furnace to fill every heating need for residential, commercial or industrial installations.**

*. . . America's Largest and Most Complete Warm Air Heating Line . . .*

**J-C**

**JACKSON & CHURCH CO.**

**SAGINAW, MICHIGAN**

*Work well done since eighty-one*



# here's an "eye-stopper" that starts the sale . . . **KO-Z-AIRE** PRODUCTS, INC.

ONE glance at the furnaces pictured here tells you that Ko-Z-AIRE's got what it takes in styling and good looks.

But the fellow who said a picture speaks louder than words wasn't talking about these skillfully engineered Ko-Z-AIRE units. For it would take a book to describe in full all the many reasons why you profit more with the Ko-Z-AIRE line.

As proof, there's Ko-Z-AIRE's one-piece, gas-tight welded steel heat exchanger, that's designed for efficient heat transfer.

There's the feature of the integrally designed channel mounted base of Ko-Z-AIRE units—which increases sturdiness—eliminates any need for special "grouting" and keeps cabinets dust-tight, leak-proof.

There's the fact that most Ko-Z-AIRE furnaces are assembled and wired at the factory—to help speed installation, make it easier for you.

Then there's the all-important "Zero Clearance" approvals that Ko-Z-AIRE Hi-Boys and Counterflows have—which cuts costs for you since it means they can be installed in alcoves, utility rooms or closets.

Or there's the competitive edge you have with Ko-Z-AIRE—as all Hi-Boys, and most other models, can be converted from one fuel to another at any time—so you can keep sales up despite restrictions.

We could go on and on. Dependable, quiet, economical performance . . . Automatic operation . . . Over 30 gas and oil-fired models, ranging from 70,000 to 420,000 BTU input—and all priced right for the job.

You can get a complete, unabridged description of this part of the big Ko-Z-AIRE story by simply mailing the coupon below. But the happy ending—customer satisfaction, fewer call-backs, bigger profits—is one thing we can't describe in words. You have to experience that yourself.

Listed by UNDERWRITERS LABORATORIES, INC.,  
or "Zero Inches Clearance."



GAS HI-BOY  
MODEL

## MORE THAN 35 MODELS



LO-BOY  
MODELS



CONVERSION  
GAS BURNER



GAS GRAVITY  
MODELS

- Counterflow and Hi-Boy Models—Oil 85,900—96,000 BTU Output
- Counterflow and Hi-Boy Models—Gas 70,000—90,000 BTU Input
- Gas Conversion Burner 70,000—300,000 BTU Input
- Lo-Boy Models—Gas 90,000—140,000 BTU Input
- Lo-Boy Models—Oil 85,400—123,000 BTU Output. Larger models to 420,000 BTU.
- Oil Conversion Burner 0.75—12 gallons per hour.
- Gas Gravity Models—70,000—125,000 BTU Input

## MAIL COUPON TODAY



KO-Z-AIRE Products, Inc., Dept. 04, Red Oak, Iowa

Please send us details on the KO-Z-AIRE Gas Hi-Boy plus information on the complete KO-Z-AIRE line.

Name.....

Title.....

Firm.....

Address.....

City..... Zone..... State.....

# AMERICAN ARTISAN

APRIL 1954

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Founded 1864

Volume 91 No. 4

## WARM AIR HEATING

## RESIDENTIAL AIR CONDITIONING

## SHEET METAL CONTRACTING

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

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Published monthly by Keeney Publishing Company, 6 N. Michigan Ave., Chicago 2, Ill., U.S.A. Copyright 1954 by Keeney Publishing Company.

Publisher—FRANK P. KEENEY

Manager—CHARLES E. PRICE

Editorial Director—C. M. BURNAM JR.

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Member of Audit Bureau of Circulations, Magazine Publishers Association, Inc., and Associated Business Publications

Yearly Subscription Price—U.S. and possessions, \$3.00; Canada, Cuba, Mexico, South America, Central America, \$4.00; Others \$6.00. Single copies, U.S. and possessions, 35c. Back numbers, 60c. January, 1954, Directory Issue, \$1.50 per copy. *Change in Address:* Report new and old address to publisher and local post office; deadline date 18th of preceding month. Entered as second-class matter, July 29, 1932, at the post office at Chicago, Illinois, under the Act of March 3, 1879. Additional entry at Mendota, Ill.

# *Syncromatic* "convertibles" give you all-purpose flexibility

**3 basic models handle  
85% of all installations!**

The Syncromatic Series 500 is designed to satisfy the most exacting requirements of practically all popular warm air heating installations with just three basic furnaces and two interchangeable conversion burners.

The 500 Series includes a Hi-Boy, a Lo-Boy, and a Counterflow warm air furnace, each superbly engineered for high-efficiency low-cost heating. Each is easily converted from oil to gas or gas to oil in a matter of minutes.

## DEALER'S CHOICE

Now dealers and contractors can meet specifications for conventional, counterflow, and perimeter heating without carrying (or waiting for) dozens of slow-moving specialized models. You can make job-winning bids and clinch them with immediate in-stock service because you have a minimum inventory of fast-moving models.

## WINNING HAND

Syncromatic has been a recognized leader in warm air heating since 1931 and manufactures a complete line of furnaces for all fuels in capacity ratings of from 80,000 to 1,000,000 B. T. U. output. It is a nationally advertised line with distribution from coast to coast and an enviable reputation for quality and performance.

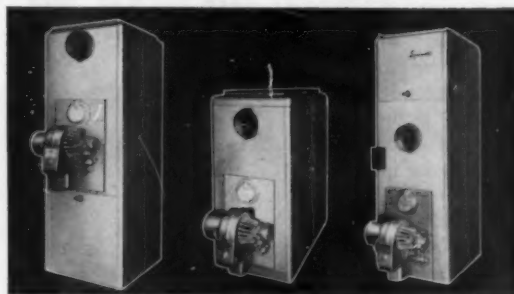
## IT'S YOUR BID

So if you suspect that your present line is not measuring up to today's competitive trend — or — if you'd like to start from scratch with priced-right profit-making sales-winners —

**WRITE NOW** for exciting details on  
*Syncromatic Series 500 Convertibles*

***Syncromatic* Corporation**

**WATERTOWN, WISCONSIN**



**HI-BOY      LO-BOY      COUNTERFLOW**  
OIL 85,000 TO 105,000 B.T.U. OUTPUT  
GAS 80,000 TO 100,000 INPUT

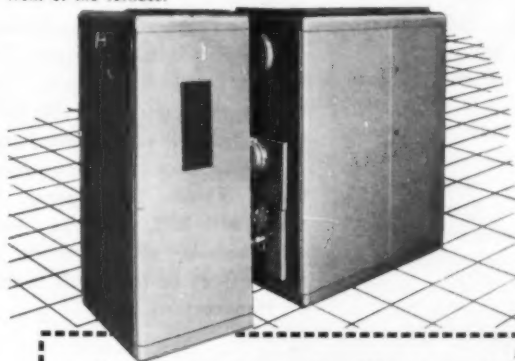


**GAS CONVERSION KIT**

**Right:** All Series 500 furnaces can be easily converted from oil to gas or gas to oil in a matter of minutes with a simple four-bolt tray assembly.



**Below:** The standard Lo-Boy furnace can be quickly changed to a Deluxe model by adding a vestibule unit to cover the burner. The front and rear doors are interchangeable, a novel arrangement which makes it possible to make either end the front of the furnace.



A-4-54

**Syncromatic Corporation, Watertown, Wis.**

**TELL ME MORE —**  
about the Syncromatic Series 500 "Convertibles."

Name.....

Company.....

Address.....

City..... Zone..... State.....

## the editor's notebook

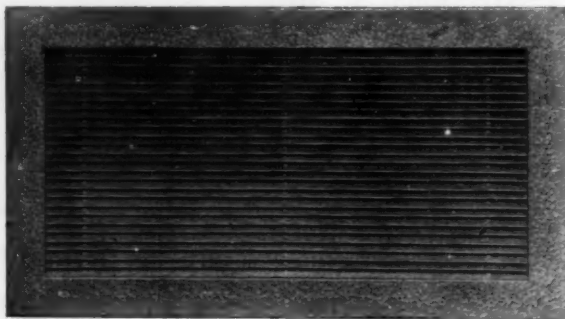
### Thumbing Through This Month's Artisan

... we find that the *Artisan Reports on Window Air Conditioners* — to dealers who want to know how these units fit into the complete residential air conditioning picture, how to select and install them, and how to take into account such special problems as inadequate electrical wiring in the home. Also included is a list of the manufacturers of window units with their complete addresses.

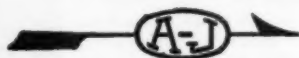
Why this special feature? Because window units are important (a \$312 million retail business volume in '53) in providing customer satisfaction if — for various reasons — central cooling cannot be used. Because customer satisfaction goes "out the window" if units aren't properly sized and installed. Because the sale and proper installation of a window unit now may lead to the sale of a central cooling installation later on. And because warm air and residential air conditioning dealers expect to sell even more window units this year than they did last year.

... and we find a systematic approach to selling outlined for us in the convention report, *The Best in Products, Service, Sales Techniques*. In a key address, Frank Nunlist offered a breakdown of the market, described how to make the most of pre-selling aids, also described closing-the-sale and post-closing techniques. Ohio sheet metal contractors attending were given some good double-barreled advice: Continue to give the customer the best in products and service; let him know you're doing just that! Discussions of products and techniques were aimed at helping them on the first point. Addresses on selling

## NEW! Thin-Core Grilles For Doors—Partitions $\frac{1}{4}$ " to $\frac{3}{4}$ " Thick!



- CUTS INSTALLATION TIME  $\frac{1}{2}$ !
- EASY TO INSTALL — NO DANGER OF RUINING DOOR!
- COMPLETE — NO WOOD MOLDINGS TO ADD!



First Grille ever designed specifically for thin doors and partitions. Anyone can install it in just a few minutes time. No close tolerances required... almost a half-inch extra on sides for positioning. Telescoping auxiliary frame fastens to grille with posts and screws. Clamps tight. No holes to position. Practically no danger of ruining door. No wood moldings. All steel. Rattle-proof. No vision, with 80% free area. Available with or without frame, all sizes. Gray or tan prime coated, or Hammertone finish in gray or bronze.

**ACTUAL SIZE CROSS SECTION** ➔

Write For Our Complete

**FREE CATALOG**

Listing Over 1000 Types and Sizes of Grilles for Every Requirement

**A-J MANUFACTURING CO.**

Dept. A-4  
2119 Washington St., Kansas City, Mo.



## the editor's notebook

(continued)

and other business matters amplified the second.

... we also see how skilled sheet metal artisans and special machines team up to make one *Sheet Metal Shop Its Own Best Ad*. Layout for this ad — a spacious office with walls remodeled in an aluminum-stainless steel motif. Special ad features (guaranteed to catch the eye of prospective customers) — office furniture skillfully remodeled in aluminum and stainless trim, beautifully wrought copper ornaments and specialty items such as radiator covers used throughout — all show that the shop is prepared to do for others what it has done so well for itself.

... and we see how the industry is *Solving Crawl Space Heating Problems* by using what authors S. Konzo and H. T. Gilkey call "one of the most interesting developments of recent years" — the crawl space plenum system. After the system is described, the authors tell how to make installations conform with certain fire codes and how to solve certain human problems — such as the housewife who may be tempted to sweep dirt into the register. (Realizing that it's easier to work on the system than the housewife, they simply suggest a register box which can be easily vacuumed.)

### Next Issue — OHI Show Section

A COMPLETE diagram of the exposition booth layout will be one of the features of Artisan's special section in the May issue previewing the National Indoor Comfort Exposition, to be held (in conjunction with the annual convention of the Oil Heat Institute of America) on May



A Complete "Inventory" of Every Fitting You Need!

...with no investment,  
 ...with no storage problem,  
 ...with immediate delivery,  
 ...AT LOWEST POSSIBLE COST!



THAT'S THE **LOCKFORMER** WAY!

One man with a Lockformer can make more Pittsburghs in half an hour than two men, working with a brake, can make in half a day! That's why nine shops out of ten use Lockformer Equipment for all fabrication—Pittsburghs, Double Seams, Standing Seams, Drive Cleats, Right Angles, Flat S Cleats, T Connections, Standing S Cleats, etc.

Lockformer speed, and its terrific savings in labor costs, not only makes hand fabrication too costly to be practical, but also means that any shop can make fittings for much less than the price of pre-fabricated fittings. The savings on even one job, as a matter of fact, will go a long way towards paying the whole cost of a Lockformer!

WRITE FOR  
CATALOG TODAY



**THE LOCKFORMER CO.,** 4615 W. ROOSEVELT RD.  
CHICAGO 50, ILLINOIS

## the editor's notebook

(continued)

16 to 20 at the Commercial Museum, Philadelphia.

Designed as a practical guide to the exposition, the section will list for each booth the exhibitors, those in attendance, and the product or products shown. A program of the OHI convention will be included.

The May issue will, of course, also contain Artisan's regular quota of articles, news material and monthly departments.

### Says Tax Unfair to Small Dealers

THE AVERAGE small businessman engaged in making installment sales is "caught in a squeeze" between the finance company and the Internal Revenue Service, according to an article in a recent issue of *The Journal of Accountancy*.

The article explains that when a dealer has an arrangement with a finance company to purchase notes given by the dealer's installment customers, a reserve is often set up. This reserve is subject to charges for unpaid installments and collection costs at the discretion of the finance company, it points out, and the dealer can make withdrawals from the reserve only when certain conditions are met, generally requiring the reserve to exceed a specified percentage of the outstanding unpaid balances on notes acquired from him.

"Regardless of the manner in which these reserves are treated on the books," the article continues, "the dealer is soon confronted with income tax problems. If he is one who takes the reserve immediately into income, he finds before very long that the government has all his cash and that he is left only with some dealer finance reserves. If he omitted the

**"Most Valuable"**

**in  
PRODUCING  
SALES**

**Sundstrand**  
All Electric  
**OIL BURNER**

Such integral values as design, construction and performance give the Sundstrand line selling power backed by consumer acceptance.

The public hears about Sundstrand. They see Sundstrand. They buy Sundstrand.

**Because:** Ultimate heating satisfaction means having an oil burner with

- ★ DURABILITY
- ★ DEPENDABILITY
- ★ COMPACT DESIGN
- ★ OVERALL ECONOMY
- ★ QUIET OPERATION

These salient features result from 32 years of engineering and development by Sundstrand. Available is a complete line of oil burners for new installations or conversion. To increase *your* sales with Sundstrand,

write to —

**SUNDSTRAND ENGINEERING CO.**  
ROCKFORD, ILLINOIS

## the editor's notebook

(continued)

reserve entirely from all records, the Internal Revenue Service soon discovers it and claims that he should have included these reserves with income all the time. If the dealer took them as a finance deduction from income, he soon finds that this type of deduction is disallowed."

### 1500 Lb Per Capita Steel Capacity

THE STEEL industry of the United States has the capacity this year to produce over 1500 lb of steel for each man, woman and child in the country, an increase of 200 lb per person during the eight year postwar period, the American Iron and Steel Institute reports.

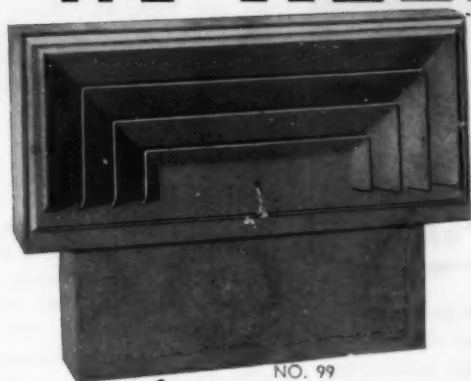
The capacity to produce steel has more than kept pace with the growth in the population, according to the institute's data. The figures are based on capacity as reported at the beginning of each year by the institute, and the population is reported by the Bureau of the Census for July 1 each year. Present capacity is 124.3 million tons a year of ingots and steel for castings; and the population, as estimated by the bureau, is over 161 million.

The actual production of steel per capita in the past year furnished more steel for each person than ever before, at 1398 lb. This compares with the previous record of 1363 lb per person in 1951 and 943 lb in 1946. The 1398 lb is based on 1953 steel production of 111.6 million tons and a population of 159.7 million.

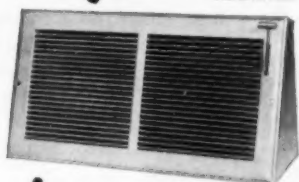
### More Stainless Steel Ingots

ANNUAL U.S. production of stainless steel ingots rose above 1 million tons for the

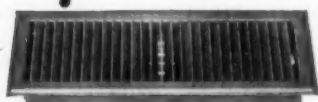
# WE HELP YOU SELL



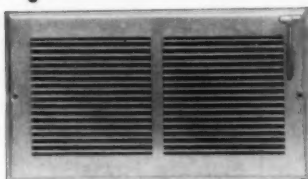
NO. 99  
OUT OF WALL PERIMETER  
REGISTER



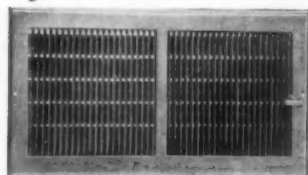
NO. 243 BASEBOARD PROJECTION  
REGISTER



NO. 512 PERIMETER FLOOR  
REGISTER



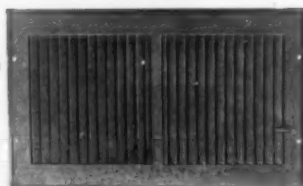
NO. 20 HORIZONTAL FIN SIDEWALL  
REGISTER



NO. 30  
VERTICAL FIN  
SIDEWALL REGISTER



THE  
NEW NO. 305  
1/2 INCH VERTICAL FIN SIDEWALL  
MULTIPLE LOUVER REGISTER FOR  
COMMERCIAL AIR CONDITIONING



## MIDCO

## REGISTERS

Yes, sir, Midco Registers are not just another line, they have unique features that make them tops in the field. Correct in design, simple and efficient in operation, beautiful in appearance—dealers and jobbers all over the country say "OUTSTANDING!"

And for you, *Mr. Installer*, Midco Registers, grilles and floor faces are quality products supplied in a wide variety of styles and sizes. For instance, Nos. 30 and 34 multiple louver registers come in forty-four sizes, from 6 x 4" to 30 x 10".

Competitively priced, Midco's popularity grows daily throughout the nation. Installers will be interested in Midco's complete story. Ask your jobber or write to factory today.

profit makers  
for jobbers

Jobber outlets still  
available in some areas.  
Write for catalog  
and price lists.

## MIDCO

REGISTER CORPORATION  
1059 GRAND AVENUE • ST. PAUL 5, MINNESOTA

## the editor's notebook

(continued)

first time in 1953. Since 1946, the output of stainless steel has increased 84 per cent, as of the close of 1953, according to reports issued by the American Iron and Steel Institute.

### More Gas for Many Cities

A REPORT from the Federal Power Commission states that during the last six months of 1953, FPC issued certificates authorizing the construction of natural gas transmission facilities which include 1909 miles of pipeline and have an estimated total construction cost of \$176,659,963. These new facilities are designed to add nearly 1½ billion cu ft of daily delivery capacity to the nation's individual transmission systems. During the calendar year 1953, the report says, the commission authorized construction of a total of 6800 miles of pipeline.

Cities of 50,000 population or more benefiting as a result of FPC authorizations during the last six months of 1953 include Washington, D. C.; Denver, and Pueblo, Colo.; Kansas City, Wichita and Topeka, Kans.; Covington and Lexington, Ky.; Baltimore and Silver Spring, Md.

Kansas City, Mo.; Atlantic City, Bayonne, Camden, East Orange, Hoboken, Irvington, Jersey City, Newark, Passaic, Paterson, Trenton and Union City, N. J.; Albany, Binghamton, Buffalo, Rochester, Syracuse, Troy and Utica, N. Y.; Akron, Canton, Cincinnati, Cleveland, Cleveland Heights, Columbus, Dayton, Hamilton, Lakewood, Springfield, Toledo and Youngstown, Ohio.

Allentown, Altoona, Bethlehem, Chester, Erie, Harrisburg, Johnstown, McKeesport, Philadelphia, Pitts-

HERE THEY ARE...SENTRY'S TWO NEWEST ADDITIONS TO THEIR EVER-POPULAR

## AT-A-GLANCE

(DIRECT AND REMOTE)

## TANK GAUGES

### THERMA-GAUGE

A superior quality, precision instrument with full view, solid red thermometer-type indicator

Without question, here is the easiest to read, accurate measure gauge on the market—And, the easiest to install, whether tank is empty, full or partially full. Unit features zinc base metal, two-piece die-cast assembly — Unbreakable red plastic assembly nut — Calibration chart, sealed between heavy, heat-resistant plastic domes — Brass rivets — And, a double coated cork float that's impervious to oil, many chemicals and acids. No gears, magnets, cams or tapes. Guaranteed to withstand in excess of 70 lbs. pressure per sq. inch. Tailor-made to fit individual tanks up to 12 ft. deep. Calibrated and factory adjusted.

**QUICKLY, SIMPLY INSTALLED.** Illus. at left shows how entire calibration and float assembly may be inserted and positioned after two piece die-cast tank plug has easily been installed in tank — only an ordinary wrench is needed.



## SENTR-ECON

A new, durable, low cost instrument for economy installations.

Exceptionally high quality for such a competitively priced gauge. Features patented double dome with calibrations positioned between inner tube and outer heat-resistant plastic shell. Also, die-cast tank fitting — plated metals — brass rivets. No gears, magnets, cams or intricate mechanisms. Double coated cork float is impervious to oils, most chemicals and acids. Simple to install, even in partially-filled tanks. 1½" openings only. Factory calibrated and adjusted to insure accuracy.



Write for complete details — literature

**KRUEGER SENTRY GAUGES**  
GREEN BAY • WISCONSIN

## the editor's notebook

(continued)

burgh, Reading, West Mifflin and York, Pa.; Arlington, Norfolk, Portsmouth and Richmond, Va.; and Charleston, Huntington and Wheeling, W. Va.

### Furnace Shipments Up Last Year

RECENTLY RELEASED Bureau of Census figures show that 1,006,292 central heating furnaces were shipped in 1953. Of these, 877,856 were winter air conditioning furnaces and 128,436, warm air gravity units. Coal burning winter air conditioners totaled 18,723; oil burning, 404,787; and gas burning, 454,346. Of the gravity furnaces, 50,378 were coal fired; 18,661, oil fired; and 59,397, gas fired.

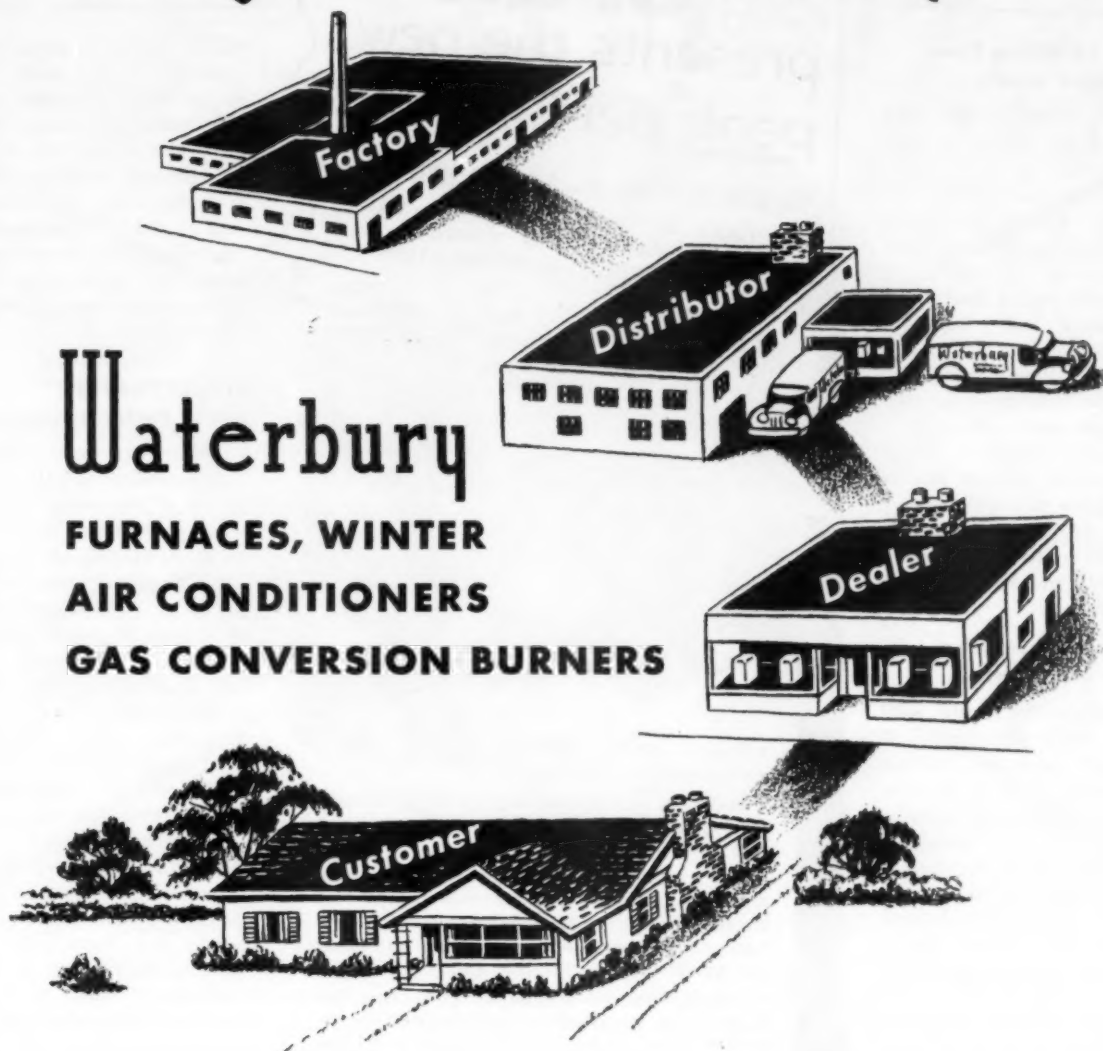
These figures compare with 909,266 central heating furnaces shipped in 1952. Winter air conditioning units shipped in 1952 totaled 748,196 and warm air gravity units, 161,070. Coal burning winter air conditioning units numbered 20,908; 340,489 were oil fired, and 386,799 were gas fired. Coal burning gravity units totaled 78,817; oil burning, 18,003; and gas fired, 64,250.

### Building Firms Lead in Growth

WITH THE CONTRACT construction industry leading the way, the number of business firms in the United States grew to a new record by mid-1953. A Department of Commerce report said there were nearly 4¼ million businesses in operation at that time. Contract construction firms increased from 414,000 at mid-1952 to 433,800 at mid-1953. The business population as a whole increased from 4,175,400 at mid-1952 to 4,212,400 at the end of the first half of 1953, the report said.



# The right choice...all the way!



Tied in with the ever-increasing movement of Waterbury furnaces from factory to customer is a whole series of right choices. At the factory, for instance, there is the selection of correct design, coupled with skilled craftsmanship. Waterbury distributors choose the complete, quality line with an organization maintaining a sound dealer-distributor-factory relationship. To the dealer, choosing Waterbury means the chance to offer this quality line to prospects already interested. And the customer finds Waterbury the answer to his heating problems, and passes the good word to his friends, who become Waterbury customers in turn.

## *The* Waterman-Waterbury Co.

OVER 47 YEARS OF WARM AIR HEATING

1122 Jackson Street N.E.

• • • Minneapolis 13, Minnesota

## the editor's notebook

(continued)

### Ship 11 Million Tons of Rolled Sheets

U.S. SHIPMENTS of cold rolled steel sheets totaled 11 million tons in 1953, compared to 9.6 million tons during 1951. The 1953 total was nearly five times as much as in 1940. Hot and cold rolled steel sheet shipments, not including tin mill products, totaled over 22 million tons in 1953, or more than twice the tonnage of 1940. Sheets represented a little over 25 per cent of all steel shipments during the past year, against about 20 per cent in 1940. Figures are based on American Iron and Steel Institute reports.

### Preventing Stainless Steel Discoloration

ACCORDING to Armco Steel Corp., when phosphoric acid or oxalic acid base cleaners are used to clean stainless steel equipment, the surfaces should first be thoroughly rinsed with water if chlorides are thought to be present. The company's research laboratories have learned that a brown colored etching occurs, caused by hydrochloric acid forming when chlorides and phosphoric or oxalic acid are mixed on the stainless steel surface.

### Predicts Booming Sale of Year 'Round Systems

UNITED STATES Air Conditioning Corp. estimates that by the end of this year approximately 125,000 new year 'round air conditioning systems will have been installed in homes throughout the country and that the air conditioning industry as a whole may reach a record volume of \$2 billion. "By 1963," the company says, "the industry may be doing \$5 billion worth of business annually. Forty per cent of this total

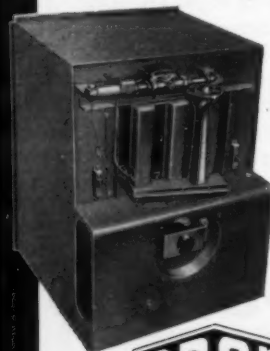
## Oran presents the new peak performance

90,000 BTU input—67,500 BTU output

FULLY AUTOMATIC, SHALLO-WELL,  
GAS-FIRED FLOOR FURNACE  
WITH FORCED AIR CIRCULATION



- Built-in air circulation fan gives maximum heat output.
- Exclusive Oran auxiliary cold air returns (optional) increase circulation of heat, even in hard to heat areas.
- 100% safety shut-off valve with 100% automatic operation—all controls completely installed, including automatic fan switch, automatic limit switch, silent operating automatic gas valve with thermostat and transformer.
- Unique, Oran all-steel burner gives clean, hot flame—the result of years of engineering research. Rated at 90,000 BTU input—67,500 BTU output.
- Compact size with beautiful baked enamel outside finish for eye appeal and sales appeal.



Oran also manufactures three other models of Shallo-Well, gas-fired floor furnaces, rated at 80,000 BTU, 60,000 BTU and 40,000 BTU inputs. This complete range of sizes will meet climatic conditions almost anywhere in the United States.

WRITE US FOR DETAILS ON THE COMPLETE ORAN LINE TODAY!



**ORAN COMPANY**

2220 SOUTH THIRD STREET, COLUMBUS 7, OHIO

## the editor's notebook

(continued)

will be in central station systems of various kinds, installed mostly in factories and large business buildings. Another half billion will be in self contained units for smaller commercial applications such as stores or restaurants. The balance will be for residential air conditioning, including year 'round systems and room units."

### Studies Cooling Tower Performance

PREDICTION of Cooling Tower Performance, a paper presented at the recent annual meeting of the American Society of Heating and Ventilating Engineers, contains the results of a study conducted by Wesley W. Smith, an associate research engineer for the Texas Engineering Experiment Station, Texas A & M College system. Emphasized are methods to facilitate prediction of counterflow cooling tower performance.

Mr. Smith used an 8 X 8 ft experimental cooling tower in preparing patterns for predicting performance. His graphs and charts offer an approximate solution to the problems covering 55 F to 85 F wet bulb temperature, 10 to 30 F range, and sea level to 8000 ft elevation. Amount of water evaporation in lb per sq ft of exposed surface, active tower volume in cu ft per sq ft of tower ground area, lb per hr of water flowing through the tower to the sq ft of ground area and lb per hr of dry air flowing through the tower to the sq ft of ground area are covered.

All prediction calculations are based on sea level performance with 70 F wet bulb temperature and 20 F range. His equations are based on conditions of variable water rate, air rate, wet bulb temperature, cooling range, etc.



#### ONE SOURCE

A complete line of prefabricated furnace fittings, grilles, humidifiers and rain goods. No need to "shop around" or try to match unrelated material. And Char-Gale systems are engineered for easy assembly and maximum efficiency when installed.

#### QUICK SERVICE

The Char-Gale truck fleet assures you of fast delivery in flawless condition, right to your door. You can keep your inventory down, yet be sure that your supply of fittings and related material will be there *when you need it*.

#### BIG SAVINGS

With Char-Gale, you save storage space, and you save time and money in figuring costs. In addition you can get liberal truckload discounts when ordering any combination of the above units. Quotations on request.

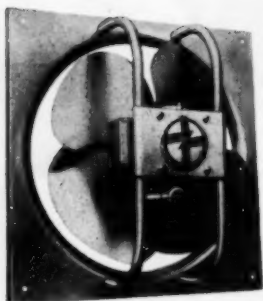
For Information and Catalogs, Contact Your Jobber or Write Direct to

**CHAR-GALE** MANUFACTURING  
COMPANY  
ANOKA, MINNESOTA

# LESS EFFORT BIGGER PROFITS

*install Peerless-built  
fans and blowers*

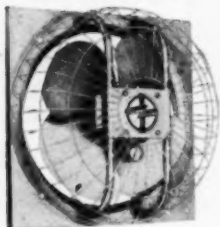
**EASY INSTALLATION—QUIET OPERATION—  
FULL GUARANTEE—SUPPLIED AS COMPLETE  
UNITS WITH JOB-MATCHED *Peerless* MOTORS**



● You combine profit with safety when you recommend Peerless Fans and Blowers.

Peerless Fan and Blower units are compactly designed. They're easy to install and the steady, velvet-smooth performance goes on and on, bringing credit to your selection . . . eliminating the need for costly service calls or the frequent adjustments required with "rattletrap" fans and blowers.

There's a certified Peerless Fan and Blower for every possible requirement. Ask your favorite Distributor about the fast Peerless service and the complete Peerless guarantee. Your inquiry will receive prompt attention from our factory.



Quiet Exhausters with or without inlet guards with 10, 12 or 16-inch fan diameters. . . complete with remote control terminal box and split capacitor motors.



**THE PEERLESS ELECTRIC COMPANY**

**FAN AND BLOWER DIVISION**

**1405 WEST MARKET ST. • WARREN, OHIO**

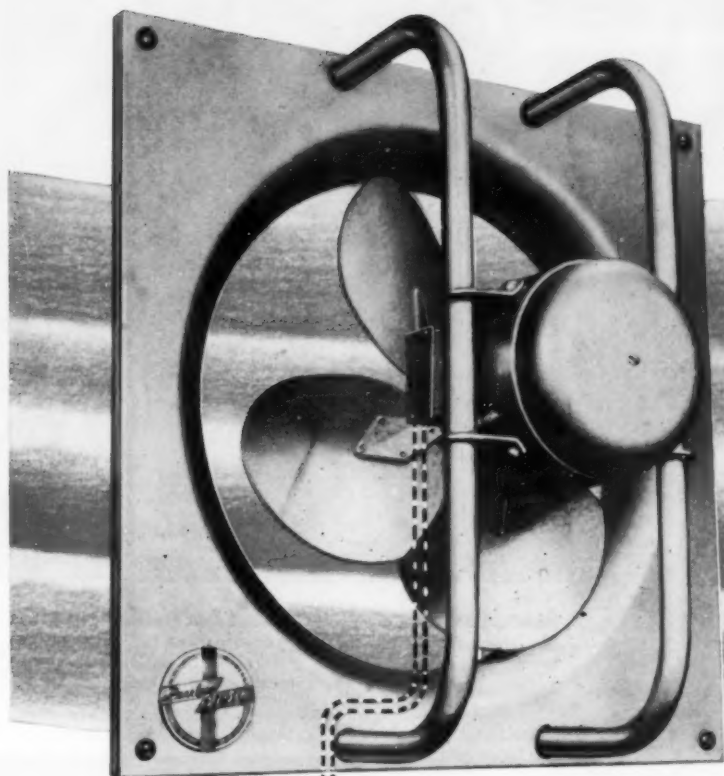


Type PAT Attic Ventilating Fans for continuous day and night operation. . . cost but a few cents a day, need lubrication just once a year.



Horizontal Ventilating Fans fit in confined areas, operate silently to exhaust fumes and heat. . . from 4,000 to 12,000 CFM capacities.





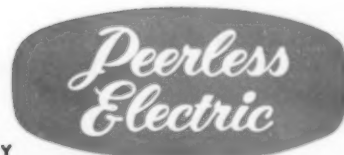
Peerless PVS Exhaust Fan furnished complete with 1, 2 or 3-speed controller starting switch ... vertical or horizontal mounting.



... *Smoothest Performer  
on the Market!!*

THE PEERLESS ELECTRIC COMPANY

FAN AND BLOWER DIVISION • 1405 WEST MARKET ST., WARREN, OHIO



#### A COMPLETE LINE

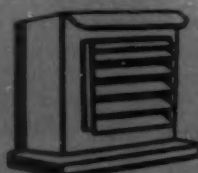
• Peerless-built certified fan and blower units meet every requirement of economy, efficiency and safety.

Write today for your free catalog showing the complete line of fans, blowers, louvers, shutters, penthouses, blower-filter package units and all accessories.

Remember, for dependable performance, and fast, friendly service, it's Peerless Electric since 1893.



SHUTTERS



PENTHOUSES



BLOWERS



**NEW G-E STACK SWITCH INSTALLS EASILY** with the adaptable stack-mounting flange provided. No adjustment or leveling is necessary. Safe, automatic recycling after temporary flame failure eliminates nuisance lockouts, saves time on callbacks.

# Save Time on Callbacks, Specify

**EASY INSTALLATION** of the new G-E oil burner controls keeps on-the-job time at a minimum; man-hours saved mean profit to you. The new G-E controls are designed to interchange easily with all other makes of controls—makes conversion a simple operation. Each control has ample wiring space and clearly indicated wiring connections. All controls are shipped to you ready-to-mount in any position. No leveling is necessary.

**EASY SERVICING** of the new G-E oil burner controls is another important benefit. Fewer moving parts in these simply designed controls mean less possibility for trouble. All moving parts are totally enclosed to reduce dust accumulation, easily removable covers provide complete accessibility.

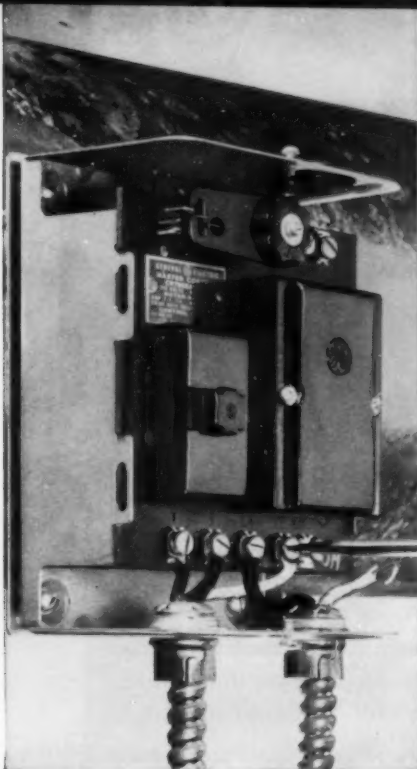
**DEPENDABLE PERFORMANCE** of G.E.'s complete line of oil burner controls lets you give your customers the dependable service they demand. Designed for top performance by leading engineers, G-E controls combine simple, attractive design with sturdy construction. Priced competitively, the new G-E stack switch, room thermostat,

and fan and limit control will take care of every normal oil burner installation. The flame detector, master control, temperature limit control, water immersion temperature control and steam pressure control round out the superior line that performs all oil burner control duties.

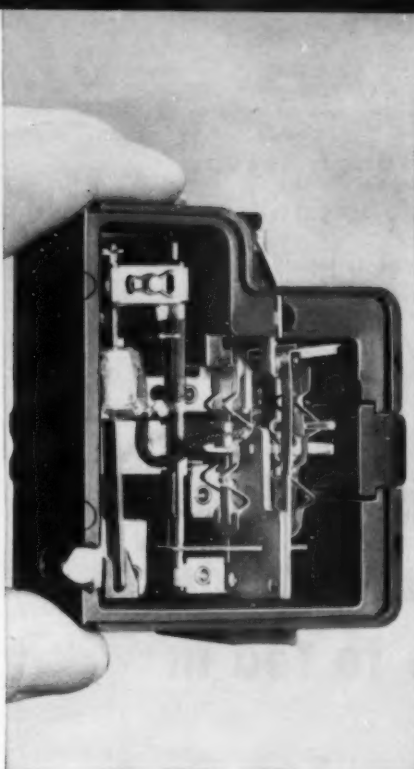
**IMPORTANT EXTRAS** offered by G.E. are extremely beneficial to you. The G-E Exchange Plan enables the dealer to exchange an inoperative heating control of *any make* for a factory reconditioned G-E control of similar function. In addition, the finest pocket-size service manual in the industry is available through G-E control servicing distributors. A network of G-E heating control servicing distributors are franchised across the nation, with more being constantly added, to help you give your customers the finest service possible. General Electric Company, Schenectady 5, N. Y.

740-55

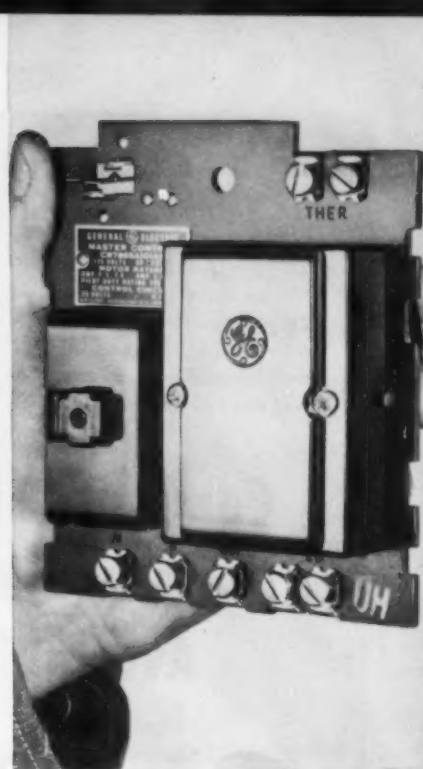
**WATCH FOR THE G-E SERVICE SCHOOL SPONSORED BY YOUR G-E HEATING CONTROL SERVICING DISTRIBUTOR**



**PLENTY OF WIRING SPACE** and a convenient, clearly marked terminal board are provided on the new stack-mounted G-E Master Control. A rubber-grommeted opening at the top permits entry of the thermostat wires and two conduit openings at the bottom are provided for the line voltage cables. A nickel-plated radiation shield protects the control from the stack heat.



**PRESET AT FACTORY**, thermal timer on new G-E stack switch is independent of flame detector action—never needs adjusting on-the-job. Timer is not affected by ambient temperature variations outside the control. A timed scavenging period purges the combustion chamber of gases and fumes after each shut down. Permanently fixed timing is provided by the ignition and lockout timers.



**UNIT TYPE ASSEMBLY** includes new combination transformer relay. Since all adjustments are factory sealed, the possibility of trouble is decreased. Simplified construction and reduced number of parts means less weight and decreased strain on stack. No lubrication of parts is required. A snap-on cover is easily removed.

# the New G-E Oil Burner Controls

## ATTEND THE G-E SERVICE SCHOOL

The G-E service school is a popular take-apart product discussion of the entire line of G-E heating controls—including a 20-minute sound moving picture trip through the G-E control factory. This demonstration puts a complete set of G-E heating controls in front of each dealer to assure thorough familiarization. A general question and answer period after each school assures that all questions are answered satisfactorily by a G-E application sales engineer. Watch for announcement at your G-E heating control Servicing Distributor.



*Progress is our most important product*

**GENERAL**  **ELECTRIC**

**TONCAN pipe and trough serve  
26 years! Stay in good condition!**

26-gage galvanized Toncan conductor pipe and eaves trough were installed on this midwest residence. After 26 years of service, an inspection showed that the metal was still in good condition. *Proof that TONCAN copper-molybdenum iron resists rust better than any ferrous material in its price class.*



**Complete Line of BERGER  
Roof Drainage Products  
Available to You in  
Rust-Resisting  
Toncan**



*BERGER Toncan Drainage Products always are uniform in size and shape to make installation fast and easy. They include: "K" Gutter; SNAPTITE® Eaves Trough; Plain Round, Round Corrugated, and Square Corrugated Conductor Pipe; Ridge Roll; Roof Valley; Flashing; plus Fittings, Hangers and Accessories.*

Toncan is Republic's sheet metal that's so famous for long service. It is an **ALLOYED IRON** containing copper and molybdenum for lasting resistance to rust.

Berger uses this quality metal to fabricate a complete line of ready-to-use roof drainage products for you.

Included in the big Berger line is "K" Gutter—the simplified type box gutter. Berger "K" Gutter is at home on every home. It blends with all architecture. It ends obsolescence problems, because it is a standard type.

Your jobber has complete stocks of competitively-priced Berger spouting, trough and gutter . . . all made of rust-resisting Toncan. See him soon.

**REPUBLIC STEEL  
CORPORATION**

**Berger Manufacturing  
Division**

1010 Belden Ave. • Canton 5, Ohio

GENERAL OFFICES • CLEVELAND 1, OHIO

Export Dept.: Chrysler Bldg., New York 17, N.Y.



*Berger*  
**ROOF DRAINAGE PRODUCTS**



# Mueller Climatrol

## TYPE 160 *GAS* UNIT HEATER



### NEW!

New design, new efficiency.  
A.G.A.-approved for natural,  
manufactured, mixed, and  
propane gas.



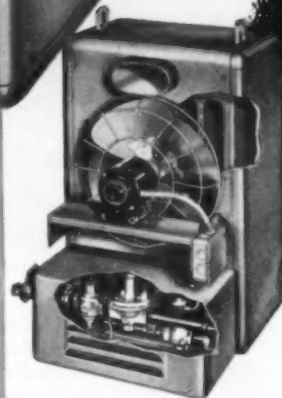
### EASY TO SELL!

Styled for eye appeal. Designed  
and built for sales appeal.  
Competitively priced.



### EASY TO INSTALL!

Shipped pre-wired and pre-  
assembled. Easy to hang.



**... EIGHT SIZES FROM 50,000 TO 225,000  
BTU INPUT IN INCREMENTS OF 25,000 BTU**

Any way you look at it, this Mueller Climatrol has what it takes to help you get a bigger share of the unit-heater business in stores, garages, factories and other commercial establishments.

Check these features:

**Compact** — only 29½" x 19½" x 12" (for the 50,000 Btu size.)

**High Crown Sheet** — no "hot spots", no joints or welds exposed to flame.

**Welded-Steel, Air-Tube-Type Heat Exchanger** — for maximum heat extraction, efficiency, *longer life*.

**Quiet Fan** — propeller type, properly pitched for even air distribution.

**Cast-Iron Drilled-Port Burner** provides even heat distribution over entire hearth area.

**Built-In Diverter** with rear flue outlet — adjustable louvers. Enclosure for burner and controls is optional.

**Smooth Finish** in cool Mountain Spring Green color, easy to repaint to match room decor.

These and many other features add up to ready acceptance of the Mueller Climatrol Type 160 Unit Heater by engineers, architects and builders.

Write for facts and figures that tell you more about this newest Mueller Climatrol money-maker.

# Mueller Climatrol

2030W W. OKLAHOMA AVE. • MILWAUKEE 15, WIS.

# Penn...

the **ONE SOURCE** for  
time-tested, year 'round

----->

## Air Conditioning Controls

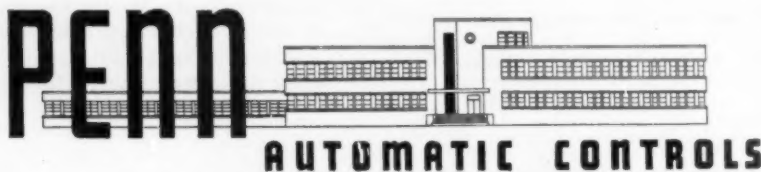
Penn builds BOTH heating and cooling controls . . . and has been doing it for leading manufacturers of *heating and refrigeration* equipment for *many* years. That's the reason Penn is recognized as the **ONE SOURCE** for dependable, time-tested, year 'round controls for central residential air conditioning!

The Type AC10 heating and cooling thermostat (illustrated) is one example of Penn's leadership. Under the attractive, harmonizing covers, you'll discover many features. Features like "heat

anticipation" and "cold anticipation" to assure *closer temperature and humidity regulation for year 'round comfort.*

Get the right start in the new, profitable *residential heating and cooling market.* Be sure that the packaged air conditioning you sell and install is fully equipped with Penn Controls.

**Penn Controls, Inc., Goshen, Indiana.** Export Division: 13 E. 40th Street, New York 16, N. Y., U.S.A. In Canada: Penn Controls Limited, Toronto, Ontario.



FOR HEATING, REFRIGERATION, AIR CONDITIONING, GAS APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES



**CLIP and MAIL  
COUPON**

**BRAND  
NEW!**

**IT'S  
FREE!**

Here's the first and only air conditioning control manual.  
It's loaded with practical installation data. You'll need and  
use this helpful information. Reserve your free copy now.  
Mail coupon to Penn Controls, Inc., Goshen, Indiana.

Firm \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_  
Individual's Name \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_  
Type of Business \_\_\_\_\_





# KEEPING COOL

is **HOT** business  
when you sell—

## A-LUM-O-AIRE

PERMANENT AIR FILTER

TRADEMARK REGISTERED

● **AIR CONDITIONING UNITS NEED  
FILTERS • TODAY'S TREND IS  
A-LUM-O-AIRE PERMANENT FILTERS**

The market is already established. Air Conditioning unit sales are at an all time high and predictions are, they will increase tremendously in 1954. You can replace the throw-a-way type filter in these units with a permanent A-lum-o-aire filter, built for maximum efficiency and cleanliness and to last the life of the unit.

These filters sell themselves because of workmanship and the exclusive type filter media. The frames are constructed from aluminized steel. The filter media is securely locked into place and is made from Alumo wool processed exclusively by Carey Electronic Engineering Co. from an aluminum alloy made to their specifications. There are no messy oils or adhesives used with A-lum-o-aire filters. Remember they wash out clean by flushing with water.

These filters were originally designed for and sold to Industry. They are now available to all markets and to fit any type of Air Conditioning, Forced Air Heating and Ventilating applications.

Manufacturers Agents, Sales Representatives, Air Conditioning Service Companies and exclusive Distributorship inquiries are invited. Sales and advertising helps to meet local requirements. Write us now.

METAL WOOL DIVISION OF  
**CAREY ELECTRONIC ENG. CO.**  
SPRINGFIELD, OHIO





**More  
FEATURES  
to sell!  
More PROFITS  
per sale!**

WITH  
**Luxaire**  
now more  
complete  
than ever!



Winter Air Conditioning  
Units approved for  
either Gas or Oil



Counterflow Units  
Approved for either  
Gas or Oil



Utility Units  
approved for  
either Gas or Oil



Gravity Furnaces  
Approved for either  
Gas or Oil



"Add-On" Vestibule  
for Basement Units



Year-Round Air Conditioners  
Gas or Oil  
2 and 3 Ton Cooling



"Add-On"  
Summer Cooling Units  
2-3 and 5 Ton



Horizontal Furnaces  
Gas Fired and  
Oil Fired



Unit Heaters  
Gas Fired  
4 Sizes



Gas Conversion  
Burners  
3 Sizes



Incinerators  
with or without  
Gas Burner

Luxaire offers "extra value" for you and your customer, for every heating dollar invested.

With Luxaire you have the largest — the most complete — most versatile and outstanding line of heating and air conditioning equipment!

With Luxaire you can meet the keenest competition with equipment that has all the features that builders and homeowners demand.


With Luxaire you can fill practically any order for any type of installation and — you also have the added

advantage of units that are approved to burn either gas or oil with the same efficiency.

Also — with Luxaire you can take advantage of the new, tremendous market for year-round air conditioning with Luxaire's new, combination Year-Round Air Conditioning Unit that heats in winter and cools in summer. And — for existing forced air systems and also new installations there's a Luxaire Summer Air Conditioner for most requirements.

So — why delay — see your Luxaire jobber today and take advantage of that "extra value" — with Luxaire.

THE C. A. OLSEN MANUFACTURING COMPANY • ELYRIA, OHIO  
**Luxaire** HEATING & AIR CONDITIONING UNITS



Your profits are directly affected by the quality of heating equipment you handle. Therefore, you should know about the design and operational superiority of Mor-Sun Forced Warm Air Furnaces — at competitive prices. Heating contractors who are Mor-Sun dealers have reported that business is consistently better, profits are higher and selling is easier since they identified themselves with this trade mark. Can you afford *not* to have all the facts about Mor-Sun? Send us your name and address today. We'll send you complete information on this newest standard of home heating quality and comfort.

**MOR-SUN FURNACE DIVISION**

MORRISON STEEL PRODUCTS, INC.  
609 Amherst Street, Buffalo 7, New York

*Manufacturers of gas and oil operated forced warm air furnaces and air conditioners in styles and capacities for every heating and cooling requirement.*



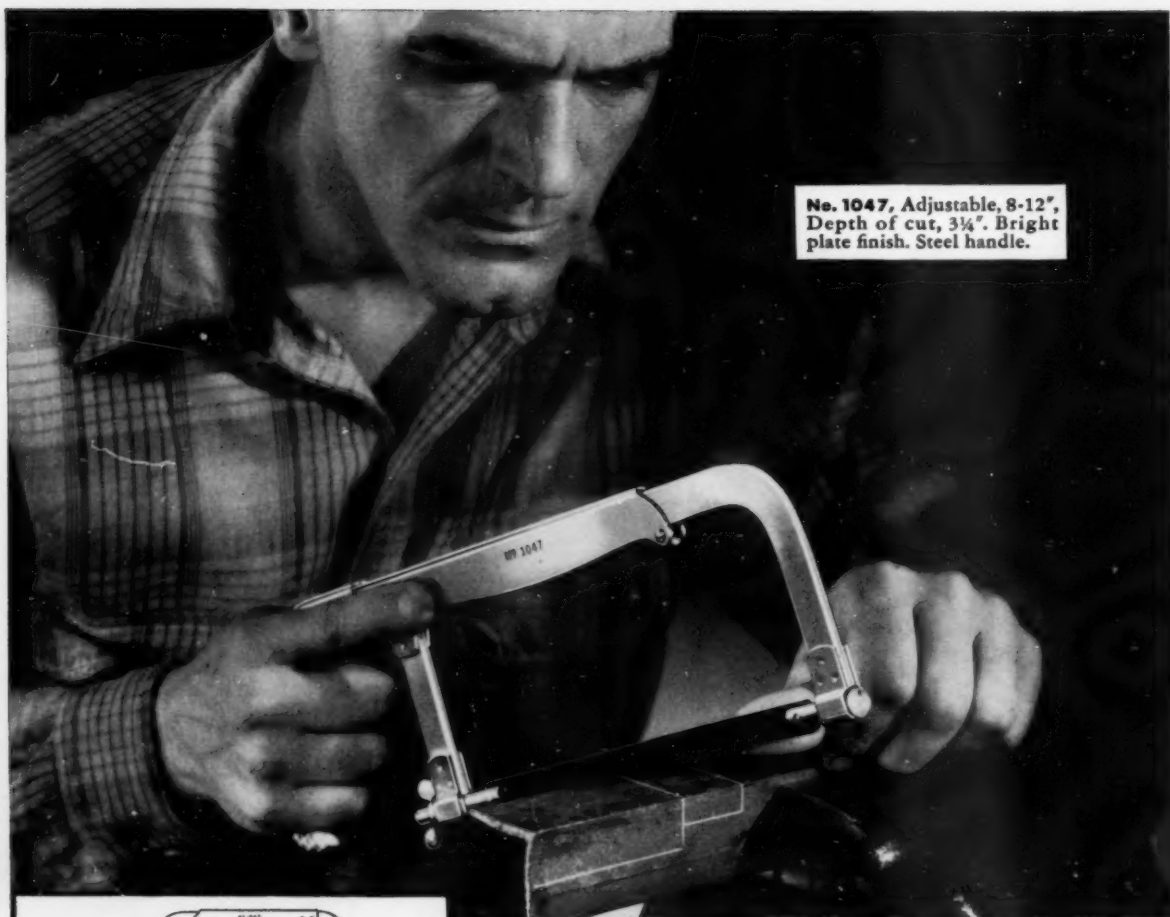
Air conditioning is now one of the most important factors in your business. The heating contractor who doesn't offer it is overlooking a sales potential that consists of every furnace customer on his books plus the many other homeowners who are interested in year 'round comfort. When you select a line of air conditioners to handle, however, be sure it is the best available. You can't go wrong if you specify Mor-Sun.

Mor-Sun models provide efficient, economical air conditioning for both central residential and light commercial installations. Available in 2 and 3 ton capacities—water or air cooled—they can be installed almost anywhere...as an ideal addition to a Mor-Sun Warm Air Furnace or as an individual cooling unit with any make heating system.

Identify yourself with Mor-Sun...a complete, competitively priced line of quality home heating and air conditioning equipment, backed by new, intensified sales promotion and advertising programs. Send us your name and address today. Let us tell you how to get the greatest return on your selling effort ...with Mor-Sun.

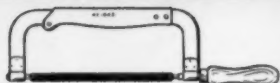


*You get so much more with MOR-SUN*



**No. 1047, Adjustable, 8-12",  
Depth of cut, 3/4". Bright  
plate finish. Steel handle.**

**No. 1042**



Adjustable, 8-12". Depth of cut, 2 1/2". Bright plate finish. Wood handle.



**No. 1046**

Adjustable, 8-12". Depth of cut, 2 1/2". Bright plate finish. Steel handle.



**No. 1049**

Adjustable, 8-12". Depth of cut, 3/4". Bright plate finish. Neoprene handle.



**No. 1044N**

Solid frame, 12". Depth of cut, 3/4". Bright plate finish. Neoprene handle. Also No. 1044 with steel handle.

## CRESCENT HACKSAWS

● Strong, rigid, well-balanced Crescent Hacksaws are designed for the exacting mechanic. Choose from five popular patterns having wood, steel or Neoprene handles. The Neoprene handles are far superior to plastic. They are impervious to oil and acid, unaffected by extremes of heat or cold, have high dielectric value and are practically unbreakable. Sold by Industrial Distributors and Hardware Dealers everywhere.

**CRESCENT TOOLS**

*Give Wings to Work*

®

*Sign of the Artisan  
Symbol of Excellence*



Crescent is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by  
**CRESCENT TOOL COMPANY, JAMESTOWN, NEW YORK**





## KNOW Cooling Towers!

**New free Marley booklet gives you all the answers on packaged water cooling towers**

Because selection and installation of the proper cooling tower can "make or break" a comfort cooling job, numerous air conditioning dealers and contractors have sought reliable information from the Marley Company, world's leading producer of water cooling towers. Now, in "PACKAGED COOLING TOWER KNOW-HOW", Marley shares its thirty years of specialized experience with all those who have a stake in the booming air conditioning market.

This new 32-page book is sufficiently basic for newcomers to air conditioning, yet is so complete that it is of great value to experienced installers. It

explains the functions of cooling towers . . . describes the workings of various types of towers . . . aids in selecting the proper tower for the job . . . gives advice on tower location, piping, electrical wiring . . . complete installation and maintenance instructions that facilitate erection and operation of cooling towers. Copies are yours for the asking.

**MAIL THE COUPON TODAY!**

THE MARLEY COMPANY  
202 W. Gregory Blvd.  
Kansas City, Mo.

*Offer good for limited time only.*

Please send me a copy of your new book, "Packaged Cooling Tower Know-How."

Name.....

Firm.....

Address.....

City.....State.....



**The Marley  
Company**

Kansas City, Missouri

another brilliant model in a famous line, the

# Field



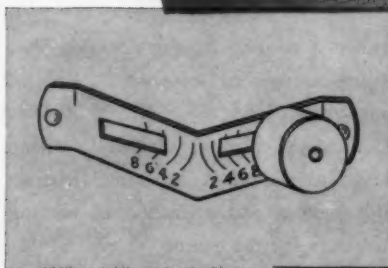
# "R-C"

## Calibrated Draft Control...



The Field "R-C" combines the convenience of calibration, easy-to-level roundness, the flexibility of the "Air-Flow" gate, the speed of single strap attaching, the capacity of the open ring, the superb accuracy of friction-free gate mounting and other patented Field features. Available in full 7" and 9" sizes (fits 6" thru 10" flues without air leakage or distortion). Ring and gate attractively finished with baked-on, heat resistant paint. In the Field tradition it is a superbly accurate, precision built instrument, and the price is geared to today's market. See your jobber or write us today. Twenty-five years and 12,000,000 installations stand behind the Field name.

Your Field representative will bring you attractive prices. If immediate information is required write the factory.

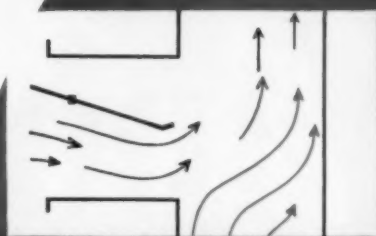


# Featuring the "Air-Flow" Gate with REVERSIBLE Wing Flap for Horizontal, Vertical or Sloping Installation

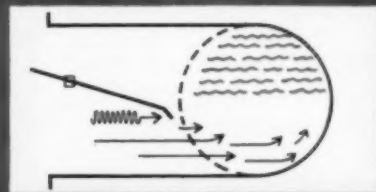
Draft action in a vertical flue is different than in a horizontal flue. Therefore, unless compensated for in some manner, accurate regulation is not possible for both horizontal and vertical installations. The Field "Air-Flow" gate provides this correction — makes a simple calibrated setting remarkably accurate for any installation, horizontal, vertical, sloping.



**DRAFT CONTROLS**



**FOR VERTICAL INSTALLATIONS:** Detail below shows "Air-Flow" gate turned inward to compensate for special air turbulence in vertical installations that tends to open a gate too wide and reduces draft below desired minimum.



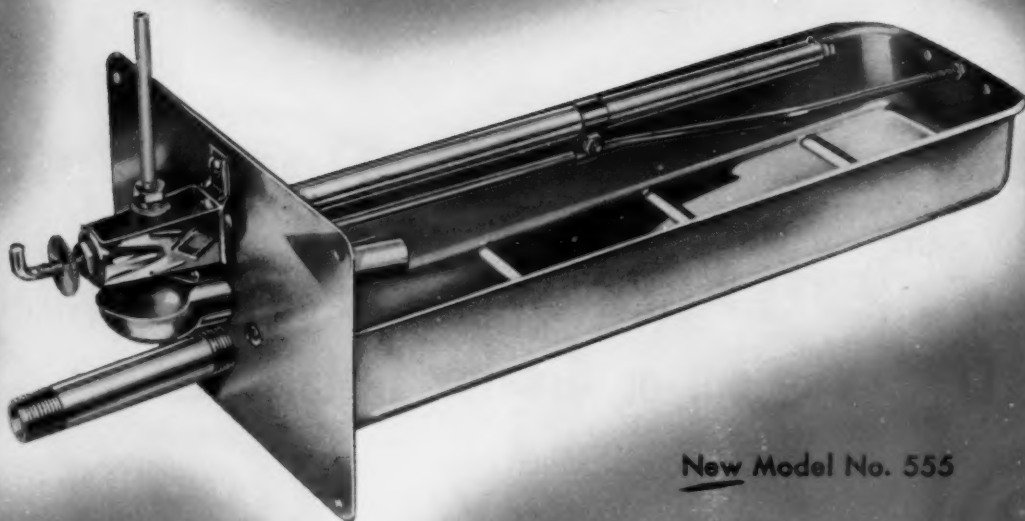
**FOR HORIZONTAL INSTALLATIONS:** "Air-Flow" wing turned outward so air entering the control exerts a lifting action when gate is in wider open positions — thus assure maximum air intake when needed.

**FIELD CONTROL DIVISION** of H. D. Cankey & Co. —Mendota, Illinois

**AFFILIATES:** Conco Building Products, Inc. —Rich, Ill. —Sears  
Conco Materials Handling Division —Crescent, Mo.

# Pre-assembled . . .

FOR FASTEST INSTALLATION



New Model No. 555

# Vaporite

**AUTOMATIC DRIP HUMIDIFIER**

Saves you money on every job. Cuts *time* and *labor*. No parts to assemble — no pan leveling or trick mounting.

Cut single plenum opening — slip *completely assembled* Vaporite through hole. Fasten 5 screws. Attach to water pipe and it's ready to operate. Note: Also available, Model No. 555-C with  $\frac{3}{8}$ " O.D. x 12" copper pipe overflow.

Most important of all — it's an *automatic humidifier* with a DRIP FEED that gives you true CONTROLLED

HUMIDITY . . . Thermostat automatically measures the amount of water to go to hot pan.



GET NEW  
**FREE**  
LITERATURE

● Here is the most modern, most efficient way to put moist vapors in the home. Nationally advertised in Saturday Evening Post, Better Homes & Gardens, Small Homes Guide.

A-4

**AUTOMATIC HUMIDIFIER CO. Cedar Falls, Iowa**





THIS FUTURISTIC VIEW of Pittsburgh — where the Sheet Metal Contractors' National Association will hold its 1954 convention — shows the Point with a group of eight metal sheathed office buildings as they will look when completed. Curtain wall construction used in three of the buildings already finished speeded up erection processes, making them ready for occupancy in record time

### SMCNA Meeting to Stress Business Problems

SEVERAL "SPECIAL INTEREST" forums are being planned for the annual convention of the Sheet Metal Contractors' National Association, to be held May 10, 11 and 12 at the Hotel William Penn, Pittsburgh. Tentatively scheduled for Tuesday morning, May 11, are forums on ventilating and air conditioning, warm air heating, sheet metal fabrication, group insurance, and out-of-town work.

Objections being raised in some municipalities to mechanical ventilation in schools on the basis that it has some effect on the spread of respiratory and communicable diseases will be discussed at the ventilating and air conditioning forum.

In addition, the forum will be asked to preview SMCNA's duct construction manual which is now in process. The warm air heating forum will hear a report on the association's work with the National Board of Fire Underwriters on changes in clearances for heating equipment. Another subject scheduled for discussion by this forum is the problem of operating a heating service department at a profit. The fabricators' forum — established for members engaged in fabricating sheet metal items and specializing in industrial work, and held for the first time in New Orleans last year — will act as a clearing house for all problems of the association's fabricating members. Problems of members regarding wel-

fare programs will be discussed at the group insurance forum. Legal and insurance consultants will be present to help answer questions. At the out-of-town work forum, members who specialize in this type of work will hear discussions relating to wage rates, local working conditions, foremen, home shop wage rates, crew make-up and similar matters.

The labor relations forum — scheduled for Monday afternoon, May 10 — will hear reports from all parts of the country on labor matters. This year the forum will meet with members of the Sheet Metal Workers International Association to discuss changes in the Standard Form of Union Agreement.

Scheduled for discussion at the business management forum are four major management problems: 1) job costs, overhead, cost allocation, etc.; 2) insurance for the contractor; 3) contracts, proposals, credits and collections; and 4) business organization for advantageous tax purposes. One entire day — Wednesday, May 12 — has been set aside for these sessions.

Through the efforts of SMCNA's Pittsburgh chapter, an attractive schedule of activities is being planned for the ladies. There will be an evening tour of the Alcoa building, a tour and luncheon at the Heinz plant, and a sight seeing tour of the city of Pittsburgh.

## what's happening . . .

(Continued)

### OHI Makes Headway with Program Plans

PLANS FOR THE NATIONAL Indoor Comfort Exposition and the 32nd Annual Oil Heat Institute Convention are progressing rapidly, according to Oil Heat Institute. Both affairs will be held under one roof — the Commercial Museum, Philadelphia — from May 16 to 20. Most of the exhibitors plan to display new products or complete new lines, and many of them will be showing year 'round air conditioning equipment. (A floor plan of the booths will be presented as part of the special OHI Show Section in the May American Artisan. Artisan's booth number will be 303.)

General sessions for dealers and for fuel oil jobbers will be held in the ballroom from 9:30 a.m. until noon every day starting Monday, May 17. The exposition — open to the industry and the general public — will begin on Sunday afternoon, May 16, at 1:00 o'clock.

Events planned include the accessory division's luncheon, scheduled for 12:30 p.m. on Wednesday, May 19, and a special session for commercial-industrial exhibitors sponsored by the commercial-industrial manufacturers' section of OHI. At this session, which will begin at 5:00 p.m. on May 19, exhibitors of heavy oil burning equipment will meet with architects and engineers to hear discussions on heavy fuel oil handling and combustion.

J. W. Owens, national chairman of the Old Timers' Club of the Oil Burner Industry, has completed arrangements for the club's annual meeting and dinner party. "Old timers" will meet on Tuesday evening, May 18, at the Philadelphia Rifle Club. Those wishing to attend may contact either H. A. Maccubbin, 120 W. Madison St., Villa Park, Ill., club secretary, or Stanley Czarnecki, Eddington Metal Specialty Co., Eddington, Pa.

### NWAHACA Revises Three Manuals

THREE DESIGN AND INSTALLATION manuals of the National Warm Air Heating and Air Conditioning Association — Nos. 5, 10 and 11 — have been revised and are now ready for distribution. One of the important additions to Manual 5, *Code and Manual for the Design and Installation of Gravity Warm Air Heating Systems*, is the inclusion of information pertaining to the design and installation of extended plenums for gravity systems. The extended plenum systems as described in the revised edition can be used in all small, compact, single story houses where the heat losses do not exceed 65,000 Btu per hr. The changes in the new edition of Manual 10, *Small Pipe Warm Air Perimeter Heating*, were made to help overcome any existing confusion that small pipe perimeter systems are limited to 4 in. round pipe, and to more explicitly define the installation methods recommended for 4 in. pipe systems. Manual 11, *Design and Installation of Summer Air Conditioning for New and Existing Residences*, has undergone extensive revisions, one of the more important additions being the inclusion of a new

procedure for calculating heat gains. This procedure, developed by the Manual 11 committee and the Air Conditioning and Refrigeration Institute, is patterned after NWAHACA's method for calculating heat losses. (The procedure for using Manual 11 is explained — with reference to a typical job — in the article, *New Way to Figure Cooling*, which appeared in the Artisan for August, 1953.)

The new editions are priced at \$1.00 each. NWAHACA members are entitled to a 40 per cent discount.

### Construction at All-Time High

CONTRACTS AWARDED for construction projects in the 37 eastern states broke several records for dollar volume in February, according to F. W. Dodge Corp. The gross figure was \$1,221,260,000, up 7 per cent over the previous February high set in 1951, and 20 per cent ahead of February 1953. The totals also were 6 per cent greater than in January.

Combined with the January contract awards, the February totals set an all-time high for the January-February figures, being 9 per cent ahead of the previous January-February high set in 1951 and 13 per cent greater than the first two months of 1953. They also set all-time high January-February totals in all three major classifications: nonresidential, residential, and public works and utilities.

"These figures," stated Thomas S. Holden, vice chairman of the Dodge corporation, "indicate high future employment of labor and high future sales of materials in one of the nation's basic industries."

Individual two-month 1954 award totals compared with the like period of 1953 were: nonresidential, \$941,789,000, up 21 per cent; residential, \$971,255,000, up 11 per cent; and heavy engineering, \$460,203,000, up 5 per cent.

Individual February awards were: nonresidential, \$468,712,000, down 1 per cent from January but 25 per cent above February 1953; residential, \$508,773,000, up 10 per cent over January and 22 per cent above February 1953; and heavy engineering, \$243,775,000, up 13 per cent over January and 7 per cent above February 1953.

### Urges More Industry Cooling Schools

"THE AIR CONDITIONING industry must produce thoroughly trained personnel as well as high grade products," according to J. F. Knoff, vice president in charge of sales of the Airtemp Div., Chrysler Corp. Mr. Knoff stated that his company has expanded its sales, application and service training programs for factory, distributor and dealer personnel. For company personnel, schools for district sales managers have been increased from two terms to four. The number of refresher courses for field sales personnel also has been doubled. A course for air conditioning engineers also has been revised and lengthened. Sales training courses have been increased to 26 weeks.

An innovation in the division's program is the establishment of a correspondence school for all field personnel. A total of 32 sessions in basic and advanced air conditioning and heating techniques are conducted.

new  
winter  
air conditioner  
by  
**RICHMOND**

Compact Steel Unit in Wide  
Range of Capacities for  
Practically any Home-heating  
Need. Fully Automatic,  
Gas or Oil.



Duridized —  
American Chemical  
Paint Co.

Now, RICHMOND offers a compact "low-boy" steel furnace — the SH — in five different sizes, for a full range of warm air heating needs.

The RICHMOND SH features a stainless steel, chromium alloy combustion chamber, heavy 12 gauge heating element and unusually large filter area. Operation is fully automatic. All controls are enclosed in the sturdy steel jacket. Casing is Duridized to provide a superior bond for the handsome green enamel finish. Units are equipped with raised steel base which eliminates

the need for grouting and permits installation on combustible floor.

Oil-fired types equipped with pressure atomizing burners, U/L listed and complying with commercial standard CS-75. Gas-fired units, A.G.A. approved for use with all types of gases, meet S.U.R. requirements.

**You will be surprised at the reasonable cost of the SH model — It's priced right for today's more competitive heating market. Send off the coupon today for full details.**

#### SPECIFICATIONS

##### Gas-fired

Capacities—input  
Btu/hr.

SH 20G— 85,000  
SH 22G—110,000  
SH 24G—140,000  
SH 26G—175,000  
SH 28G—220,000

##### Oil-fired

Capacities—output  
at bonnet, Btu/hr.

SH 20P— 80,000  
SH 22P—106,000  
SH 24P—143,000  
SH 26P—175,000  
SH 28P—212,000

Automatic controls—fully enclosed  
Heavy 14 gauge heating element  
Stainless steel combustion chamber (SH-P)  
Extra large filter area  
Raised base  
Steel jacket —Duridized green enamel

#### Richmond radiator co. Metuchen, New Jersey

Please send me more information and literature on the new SH Winter Air Conditioner. No obligation, of course.

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

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CITY \_\_\_\_\_

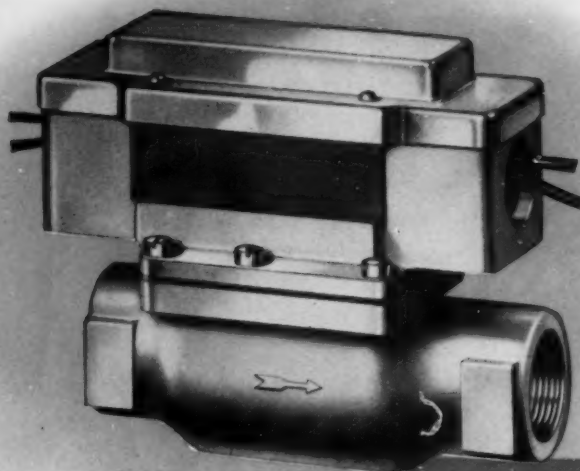
ZONE \_\_\_\_\_

STATE \_\_\_\_\_

We are ( ) heating wholesalers ( ) heating contractors.

AA-4





*you asked for*  
**ACTROL**

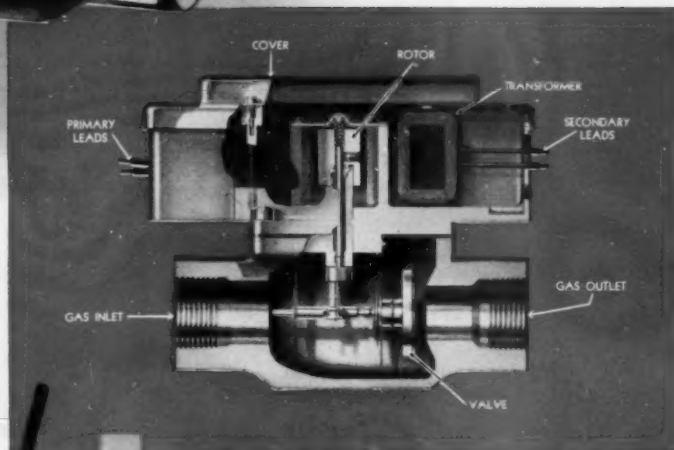
*Here it is!*

You asked for a quiet main control valve... one that would be simple and trouble-proof... one that would be easy to install and service. The Actrol valve gives you all this and more.

Actrol is actually *silent* because the valve floats to a stop instead of banging against the end of a plunger tube. For this reason, too, *the valve cannot stick open.*

The strongest force is exerted at the beginning of the stroke when the valve must open against gas pressure.

The built-in transformer—a current limiting type—saves the expense and inconvenience of mounting a separate transformer



unit. It can be turned end for end to facilitate wiring. It is replaceable.

The Actrol valve can be installed at any desired angle around the centerline of the body, and any part of the unit can be serviced without removing the valve body from the line. Added to all that, Actrol's low power requirement insures long thermostat point life. Indeed, Actrol is the valve you asked for... and more.

**MILWAUKEE GAS SPECIALTY CO.**

Dept. AA-4

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Write for more  
 information.



*A Lifetime of Luxurious Winter Living*



# **HERBSTER**

Automatic, Gas-Fired, Forced Air

# **FURNACES**

**HERBSTER PRODUCTS COMPANY**  
877 Addison Road • Cleveland 3, Ohio



with the famous  
"TORCON" HEAT EXCHANGER  
*the unit that triples  
gas furnace life*

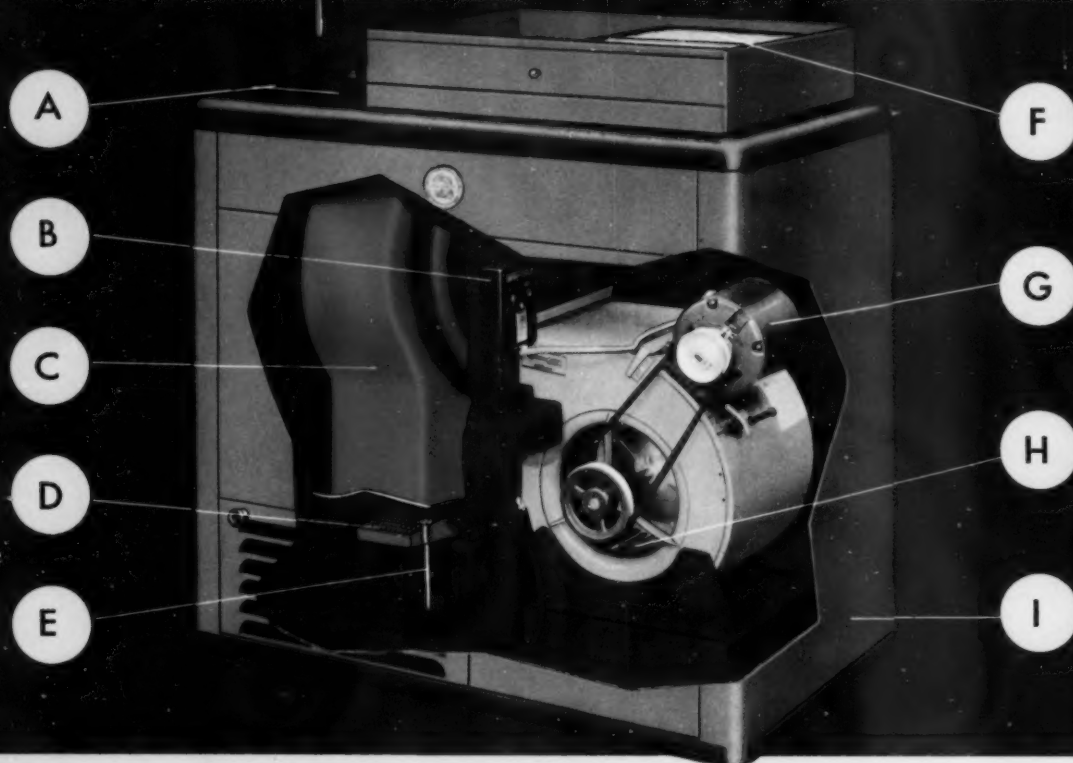
BULLETIN 354

AN AFFILIATE OF THE BETTCHER MANUFACTURING CORPORATION

# HERBSTER

MODELS LB-100 or LB-120

*for work-free, cold-free winters*



- A DUCT COLLARS**—Located at top of unit to facilitate duct installation. Large area for free construction.
- B BLOWER AND LIMIT SWITCH**—Blower is automatically started and stopped according to temperature. The Herbster Limit Switch prevents overheating. Temperature controls and blower can be adjusted to take advantage of Continuous Air Circulation.
- C EXCLUSIVE TORCON HEAT EXCHANGER**—Lightweight, cast iron venturi designed heat exchanger provides more square feet of radiation in a given space.
- D NEW NON-CORROSIVE BURNERS**—Especially designed to permit more efficient combustion of gas with minimum waste.
- E SAFETY PILOT**—Keeps gas supply valve closed unless pilot is actually burning. Puts an end to furnace worries.
- F JUMBO SIZE FILTER**—Your furnace heat is the cleanest air

in your house. Filters easily replaced without removing any panels from the furnace.

- G SILENT GENERAL ELECTRIC BLOWER MOTOR**—Gives years of dependable, silent service. All Herbster accessories are the finest money can buy.
  - H AIR CRAFT FAN MOVES MORE AIR**—The unique blower assembly speeds warm, comfortable air even through longer ducts that lead to remotely located rooms in your house.
  - I SMART LOOKING CABINET**—A beautiful baked enamel two-tone finish that "looks right" even in a recreation room. Rounded and handsome from top to bottom.
- MINNEAPOLIS-HONEYWELL FINGER TIP CONTROLS**—Throughout the entire heating season you get the room temperature you select on the thermostat—automatically—thanks to dependable Minneapolis-Honeywell Controls or their equivalent.

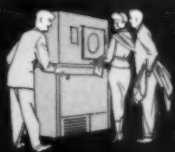
# HERBSTER

"HEAT-N-DRY"

MODELS DC-100 AND DC-120

**HERBSTER "HEAT-N-DRY"  
SAVES MONEY THREE WAYS**

**SAVES \$125**  
on initial cost



**SAVES \$50**  
on installation cost



**SAVES \$\$\$**  
every month  
on operating cost



**NO STOOPING FOR MY LADY**—The door on Herbster Heat-N-Dry is placed just right—at arm level for easy loading from your laundry cart. No back-breaking bending necessary to get wet clothes into the side of a low cabinet.

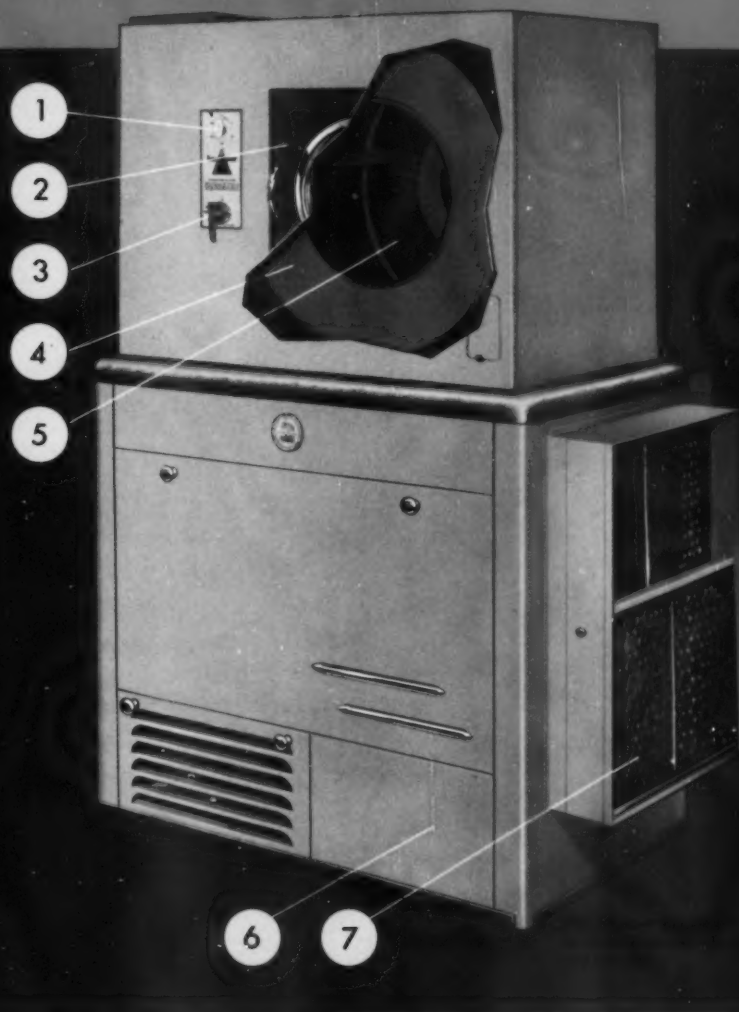
**NO BASEMENT MOISTURE PROBLEM**—All water in wet clothes and lint is blown through the vent extension to the outdoors. No condensation or water streaks on basement walls.

**NO COMBUSTION GASES TOUCH CLOTHES**—Unlike ordinary gas driers, only clean air dries the clothes because no combustion gases enter the drying chamber.

**SAVES FLOOR SPACE**—Eliminates the need for any floor space for a separate dryer—a great saving on space for small home owners.

**SAFELY DRIES ANY FABRICS**—Temperature of dryer scientifically controlled at 170° average which literally destroys all bacteria. Since your clothes are wind-blown dry, in a short drying period, positively no danger of discoloring shrinking, or burning clothes!

America's most wonderful worksaver  
a combination dryer and furnace



- 1 **FULLY AUTOMATIC**—Set the dial on your Herbster Dryer to your desired drying time and forget it. Fully automatic in its operation.
- 2 **AUTOMATIC SAFETY DOOR**—All action stops when door is opened. Starts again as soon as you close it.
- 3 **HERBSTER HEAT CONTROL**—In addition to your "Drying Time" dial, the Herbster has one other control marked warm — cool — cold. When properly set this will assure comfortable temperatures in your home throughout the year.
- 4 **BLOWN AND TUMBLED DRY MUCH FASTER** than ordinary driers. A full wet load dries in only 29 minutes. Other dryers require at least an hour drying time.

Larger blower on gas furnace makes this possible.

- 5 **SUPER CAPACITY**—If you have medium or large sized washings, you'll appreciate the big 19 lb. wet clothes capacity.
- 6 **BEAUTIFUL MATCHING CABINET**—You'll be proud of the way your Herbster's handsome, streamlined cabinet improves the appearance of your home.
- 7 **WASHABLES DRIED WITH FILTERED AIR**—Ordinary driers take in the unfiltered air directly from your basement or utility room. All air entering the Herbster Heat-N-Dry is carefully cleaned through a dust-stop filter.

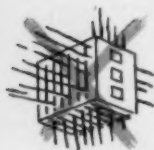


*"and you wind dry clothes in half the time!"*



THE HEART OF A  
FURNACE IS ITS  
HEAT EXCHANGER

Only **HERBSTER** has the new patented  
**'TORCON'** cast iron · concentric · venturi heat exchanger



**MORE EFFICIENT**—Cast iron has long been recognized as a better, more efficient heat transfer material for furnace heat exchangers, but steel because of its cheaper cost often has been used as a substitute. The new patented, compact "Torcon" permits cast iron to be used for the first time in gas furnaces at no increase in cost.



**LASTS YEARS LONGER**—No burn-outs are experienced with superior Torcon cast iron heat exchangers. The heat-resistant walls last a lifetime, eliminate costly replacement of "burned out" heat exchangers made of cheaper, thinner materials.



**ONE PIECE CONSTRUCTION**—A durable one-piece casting, the flue outlet, combustion chamber and heat transfer section are one solid unit that is completely trouble-free. Guaranteed for 25 years.



**GREATER HEATING ECONOMY**—Look how the patented concentric venturi design provides scores of curved surfaces and passages to utilize every bit of heat from the gas flames as it slowly travels through the unit. Compare the Torcon with any other heat exchanger, and you will see it has more square feet of radiation in a given space.



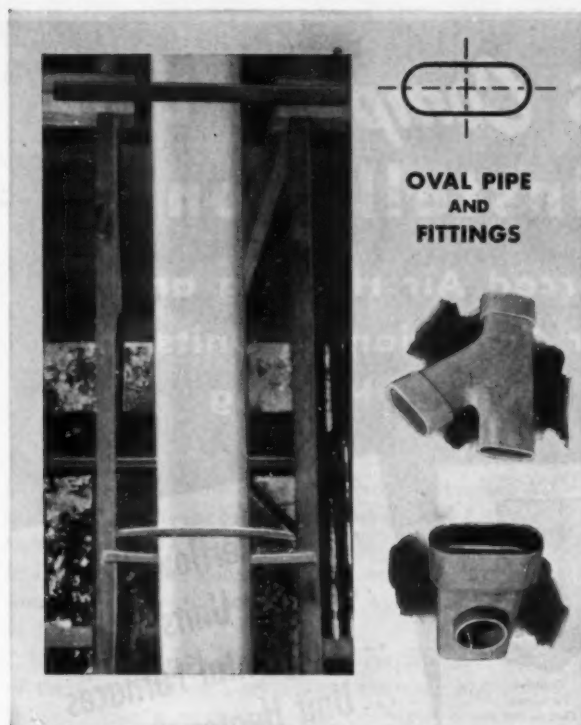
**LESS WEIGHT**—The Herbster Torcon due to its unique design weighs only 110 pounds while ordinary heat exchangers of like capacity weigh up to a quarter of a ton! The unit is easily installed and has less weight per square foot of radiation than any other heat exchanger.



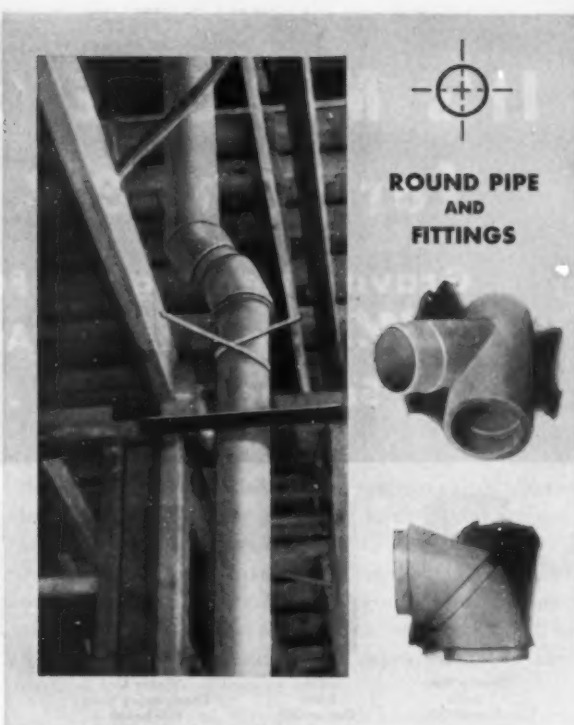
**NOISELESS**—One-piece construction is absolutely noiseless. The Herbster Torcon element eliminates the annoying "cracking" and "popping" noises so common to furnaces made of sheet steel.

*"The greatest heating improvement since the gas furnace"*





**OV  
AL PIPE  
AND  
FITTINGS**



**ROUND PIPE  
AND  
FITTINGS**

# This full TRANSITE<sup>®</sup> line makes easy-to-install, efficient domestic gas venting jobs

**... Economical!**  
**... Approved!**  
**... Safe!**

TRANSITE gas vent pipes and fittings are furnished in both round and oval styles. They include Type B for a wide range of appliances and Type B-W for recessed wall heaters. They make an all Transite passageway available to vent all types of domestic gas heaters with any type of house construction.

Transite Gas Vent Pipe, a Johns-

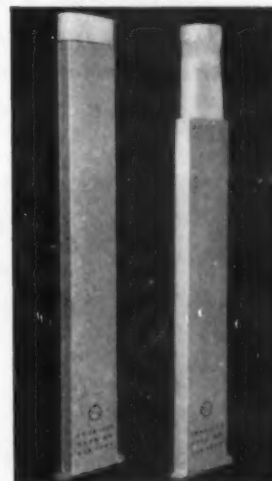
Manville asbestos-cement product, is accepted throughout the industry as a standard for safe, efficient venting. Millions and millions of feet have been installed year after year since it first came on the market more than twenty years ago.

Designed and engineered for its job, this asbestos-cement pipe is the only vent pipe continuously listed by Underwriters' Laboratories, Inc. since 1932. Transite resists heat, resists corrosion, is easy to handle on the job.

For further information, please write Johns-Manville, Box 60, New York 16, N. Y.



**INCLUDING RECESSED  
WALL HEATERS**



The Transite B-W Gas Vent is available with oval bell for connection to oval pipe extending through roof. Also with built-in, oval-to-round adaptor when such extensions are made with round pipe.



**Johns-Manville TRANSITE GAS VENT PIPES**

# It's MONCRIEF'S *Complete* Line for *Complete* Installations

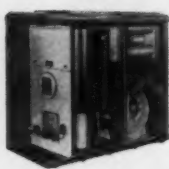
Gravity Heating . . . Forced Air Heating and  
**NOW...** Year 'Round Air Conditioning Units for  
Summer Cooling . . . Winter Heating



Counterflow  
Units  
Gas or Oil



Utility  
Units  
Gas or Oil



Winter Air  
Conditioning Units  
Gas or Oil



Gravity  
Furnaces  
Gas or Oil



Horizontal Furnaces  
Gas and Oil



Year 'Round Units  
Heats in Winter  
Cools in Summer



Unit Heaters  
Gas Fired

You can order a MONCRIEF Unit of practically  
ANY type or size for ANY heating or air conditioning  
requirement from your Moncrief jobber. He  
carries a complete stock in his warehouse.

... Counterflow Units  
... Utility Units  
... Horizontal Furnaces  
... Unit Heaters  
... Summer Cooling Units

**ALSO**  
Gas Conversion Burners  
Oil Conversion Burners  
Incinerators

**ALSO** MONCRIEF'S SUREFIT SNAP LOCK  
Pipe and Fittings . . . Everything for  
ANY TYPE of Installation. AND . . . They're  
Carton Packed at  
**No Extra Cost to You !**  
Easier to Handle . . . Quicker to Assemble  
Quicker to Install



**MONCRIEF**  
NOW More Complete  
Than Ever for Greater  
Profits . . . Easier Selling . . .  
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Everything from ONE  
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MONCRIEF Jobber

**THE HENRY FURNACE COMPANY**  
MEDINA, OHIO

HEATING AND AIR CONDITIONING UNITS

**MONCRIEF**

FURNACE PIPE AND FITTINGS



## *Arnold Kruckman's Washington Letter*

# New Housing Act to Affect Loans

HEARINGS ON the Administration's National Housing Act of 1954 began in the Senate the latter part of February. In the House, the hearings began the middle of March. It is expected the committees will be ready to report some time between the middle of April and the first of May.

In the Senate, the bill comes under the jurisdiction of the Committee on Banking and Currency and in the House, under a committee with the same name. The chairman of the Senate committee is Senator Homer E. Capehart of Indiana, and the chairman of the House committee is Representative Jesse P. Wolcott of Michigan.

Of course, much interest has focused on the changes that have been suggested in Title I, which would be amended to govern the FHA home mortgage insurance program. In his report, which is paralleled by Representative Wolcott's report, Senator Capehart states: "Two new programs would be authorized which are designed to assist in the rehabilitation and conservation of urban areas, and in the rehousing of families displaced by slum clearance and other governmental operations."

As is well known, there is some vigorous — even violent — opposition to public housing of any kind. One of the foremost opponents is Dr. Paul L. Poirot, of the Foundation for Economic Education. Recently Dr. Poirot wrote a paper on public housing, in which he said that "the tendency of rent control to aggravate the housing shortage seems to have been recognized even by the government. With one hand, the government holds the price of housing below its competitive levels; with another hand it forces the diversion of productive effort from other uses into home construction."

### To Encourage "Open End" Mortgages

Senator Capehart, in his discussion of Title I of the new housing act, says: "A new provision will be added to authorize the insurance of 'open end' mortgages. The provisions of the act governing the present FHA mortgage insurance program will be amended for the purpose of providing changes in the prescribed maximum amounts and terms of the mortgages insured under

these programs (especially with respect to existing housing), providing greater flexibility in the administration of the programs and simplifying the statute.

"Section 101 will amend provisions of section 2(b) of the National Housing Act which concern the insurance of lending institutions against loss on loans made to finance alterations, repairs, and improvements in connection with existing structures.

"Subsection 1 of the proposed amendment will increase the maximum loan amount for property improvement and repair loans from the present maximum of \$2500 to \$3000. Under subsection 2, the maximum term of such loans would be increased from three years and 32 days to five years and 32 days.

"Subsection 3 would amend the provisions of section 2(b) for so-called 'class I(b)' loans to permit increases beyond the present maximum of \$10,000, regardless of the number of family units, on the basis of \$1500 per family unit or \$10,000, whichever is the greater. This subsection would also increase the maximum maturity on such loans from seven years and 32 days to 10 years and 32 days. Class I(b) loans finance the improvement or conversion of existing structures used or to be used as apartments or dwellings for two or more families."

Dr. Poirot makes this comment: "The government offers mortgage money at lower than the market rate of interest, thus applying a little pressure on lenders to the advantage of borrowers. The government also offers mortgage insurance, or guarantees the payment of mortgages which otherwise would be too shaky to seem attractive to private investors. As a final resort, the government may offer the mortgage in the form of tax-privilege or even tax-exempt government bonds to attract investors toward the 'opportunity'. So the government has various ways of applying its powers of taxation so as to interfere with the housing market."

### How Changes Affect New Homes

To go back to Senator Capehart, he further explains the new housing act thus: "Section 102 will amend section 2(f) to permit termination of the old Title I



## Washington Letter

claim established prior to creation of the Title I revolving fund and the authorization for premium charges for Title I insurance. . . . The amendment will authorize the Federal Housing Commissioner to invest surplus funds in government obligations. In section 103 the act provides authority to terminate the insurance and mortgages after the date the Housing Act of 1954 becomes law, and authorizes insurance and mortgage loans financing new low cost, single family homes, particularly in suburban and outlying areas. There is also authority to insure 100 per cent mortgage loans up to \$7000 for disaster housing.

"Amendments to Title II of the National Housing Act will authorize the insurance of mortgage loans made by approved lending institutions for the construction, purchase and refinancing of one family to four family dwellings. This is FHA's major mortgage insurance program with respect to sales housing.

"Section 203 will be amended to consolidate the present subsections (b) (2) (A), (b) (2) (C), and (b) (2) (D) and to provide a simplified form of maximum ratio of loan to value and maximum dollar amount of mortgages to cover both new and existing homes.

"The proposal would eliminate statutory distinctions within specific programs related to proposed and existing construction. It would provide maximum limits and leave specific mortgage amounts to be handled within the statutory limits by processing of individual applicants under regulations to be prescribed by the Federal Housing Commissioner. It would eliminate confusion as among the number of programs now provided for in sections 203 and 8. It would also permit the same mortgage limits for mortgages on existing homes as for mortgages on new homes.

### Mortgage Ceiling Raised

"Under the new proposal, the maximum amounts of mortgages which may be insured by FHA (under section 203) would be \$20,000 for a one family or two family residence; \$27,500 for a three family residence, or \$35,000 in the case of a four family residence, and not to exceed the sum of 95 per cent of \$8000 of value and 75 per cent of the value in excess of \$8000. In addition, the mortgagor will be required to have made at least a 5 per cent down payment. Under this proposal, the highest statutory mortgage maximum for a one family or two family home would be \$20,000 as compared to the present ceiling of \$16,000; for a three family home, \$27,500 as compared to the present \$20,

500; and for a four family home, \$35,000 as compared to the present \$25,000. However, the bill would provide that mortgages insured under section 203 may not exceed the ceilings prescribed by section 203 prior to the effective date of these amendments — unless the President, pursuant to the authority which would be given him in Title II of the bill to establish maximum mortgage terms and limits for government-aided housing, has authorized a higher ceiling.

"A technical change will also be made in the method of calculating the 5 per cent minimum down payment. Such down payment, where required under the present law, must equal '5 per cent of the appraised value'. This has an unintended and unreasonable result in certain cases. Thus, four identical row houses may be valued alike except for the corner house which the FHA values at \$500 more than the other three. Even though all four houses are sold at the same price, the present law requires the purchaser of the corner house to make a \$25 larger down payment than the purchasers of the other three houses. This has the absurd result of limiting the mortgage on the more valuable house to a smaller amount than is prescribed for the less valuable houses. The bill will correct this defect in the present law through a new provision which requires the down payment to equal at least '5 per cent of the commissioner's estimate of the cost of acquisition.' This change in no way relaxes the separate requirement that the mortgage loan shall not exceed a specified percentage of the 'appraised value' of the property as determined by the FHA."

Dr. Poirot makes this comment: "The current housing 'shortage' is not a thing that can be measured merely by comparing the number of families or the number of people with the number of dwellings or the number of rooms. The 1950 census reports an average of 3.5 persons per occupied dwelling unit in the United States, compared with 3.7 persons at the end of World War II, 3.8 persons in 1940 and 4.8 persons in 1900. The total number of dwelling units in 1950 was 23 per cent greater than in 1940, whereas the same period saw a population increase of less than 15 per cent. These figures certainly indicate that most of the so-called housing shortage stems from disruption of the market mechanism rather than from a decline in dwelling facilities."

Maximum statutory mortgage terms under section 203 are now 20, 25 or 30 years, depending on whether the house is new or old, and on the number of bedrooms, the size of the loan and whether the mortgagor is the owner-occupant. The amendment fixes the maximum at 30 years. The same section makes it possible for the



# "Monel was easy to fabricate in the shop and on the job"

Caleb Ringle



Mr. Ringle is president of Jacob Ringle & Son, Inc., well-known contractors of Jersey City, N. J. His company handled roofing and sheet metal work on the Dun & Bradstreet Building.

"We were asked to quote on Monel," says Mr. Ringle, "because the architects were interested in using a corrosion-resisting material that had high strength and rigidity. Following our quotation, Monel was specified, and we went to work. The Monel was easy to fabricate in the shop and on the job."

Like Jacob Ringle & Son, many contractors are handling Monel installations these days. How about you? There are plenty of jobs you can land. On public buildings . . . schools . . . churches . . . factories . . . hospitals . . . even private homes.

Don't pass up quoting on a job simply because you've never worked with Monel. Good workmanship and know-how in Monel is hardly different from what it is in any roofing metal.

Monel Roofing Sheet, in fact, has a special soft temper that makes it easy to work with. Monel can be sheared or nibbled and is readily handled with brakes and other tools. For neatly soldered joints, you pre-tin the sheet at the shop. Then, when you make the actual installation — and have the sheets locked, cleated and fitted with proper expansion joints — a heavy, hot iron assures a tight, perfect seam.

Write for the free booklet, "ONE METAL ROOF . . . for the Life of Your Building." It's packed with information you'll find mighty helpful in talking with architects or customers.

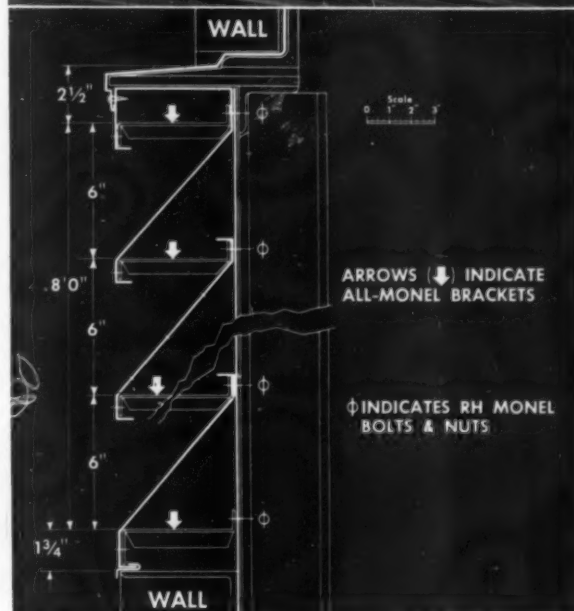
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Inco Nickel Alloys



## Monel Roofing... "for the life of the building"

Completed in 1951, the Dun & Bradstreet Building in New York City is regarded as one of the most modern and efficient office structures in the country. It won honorable mention in Office Management's Office-of-the-Year competition. Louvers, concealed behind ornamental grilles on both sides of entrance, are Monel. The air conditioning enclosure on the roof also has Monel louvers, through which fans exhaust the air from the building. Architects: Reinhard, Hofmeister & Walquist, New York. Sheet metal work: Jacob Ringle & Son, Inc., Jersey City, N. J.



Construction of the all-Monel louvers using .031" Monel Roofing Sheet for the top blade, .025" for the other blades, and .062" for bracket braces.

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**1** Easy Installation



**2** Easy direction set



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## WASHINGTON LETTER —

Federal Housing Commissioner to increase the rate on mortgages from 5 to 6 per cent; under Title II of the bill the President is authorized to establish the maximum interest rates without any limitations. The new act terminates the authority of the Federal Housing Commissioner to insure mortgages on farm housing. The authority is continued to insure 100 per cent disaster housing loans on the same basis as formerly permitted.

### Covers Slum and Cooperative Housing

Another amendment, section 115, permits the commissioner to insure mortgages on existing multi-family structures if located in slum or blighted areas and when part of the proceeds are used to repair or rehabilitate the property. The amendment retains the present mortgage amount limitation of \$2000 per room, or \$7200 per family unit (less than four-room) but would remove the \$10,000 per family unit limitation and would permit an increase in such limitation to \$2400 per room and \$7500 per family unit for elevator type structures. The labor standards that are legal apply to multi-family housing financed by mortgages insured under the new section 220 of the bill.

Section 119 amends the eligibility for cooperative housing mortgage insurance. It permits FHA insured cooperative housing mortgages to be as high as \$25 million in amount if the mortgagor cooperative is regulated by federal or state law as to rents, charges, and methods of operation. The section will also change, with respect to non-veteran projects, the present per-family or per-room mortgage amount limitations from \$8100 per family unit or \$1800 per room, to \$2250 per room and with a per-family unit limitation of \$8100 applicable only if the number of rooms is less than four. It provides for changing from a cost basis to a valuation basis. The project must have 65 per cent veterans, and there would be an increase authorized for elevator type structures in both veteran and non-veteran projects.

The new section 220 will provide a mortgage insurance program to assist in the rehabilitation of existing dwellings and the construction of new dwellings in what the act calls "urban renewal areas". The property assisted must be located "in a delineated area" with respect to which a specific plan of rehabilitation and conservation has been established. The new mortgage insurance will cover existing construction as well as new construction and include assistance for rehabilitation as well as redevelopment. It covers anything from one family dwellings to those in excess of four units. Mortgage insurance for relocation of housing would be fixed at a maximum mortgage amount of \$7000 and not in excess of 100 per cent of value for a single family dwelling where the mortgagor is the owner-occupant.

A minimum cash outlay of \$200 will be required to



# USS Galvanized Steel Sheets

—for jobs requiring quality workmanship

USS Galvanized Steel Sheets are a perfect complement to the skill of your finest workman. Their high quality assures superior finished ductwork installations.

True bends, tight seams and neat joints—all the characteristics of a top-notch job—are quick and simple with these quality sheets. Bending, rolling, cutting and stamping can be accomplished in minimum time with the most satisfactory results. And the uniform coating of zinc gives outstanding resistance to flaking, chipping and corrosion.

For finest performance—both in the fabricating shop and on the finished job—make it a point to use USS Galvanized Steel Sheets. They're available in good supply. You can be sure that you'll be able to get all you need of these fine sheets to handle all your first-class jobs. Order yours now—and look for the USS label on the outside sheet of every order of USS Galvanized Steel Sheets. For more information, ask your sheet distributor or our nearest district office. United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa.



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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

## USS GALVANIZED STEEL SHEETS



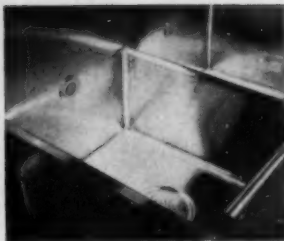
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UNITED STATES STEEL





**BUILDS GUARDS.** Sides are sheared and formed on brakes and welded at corners. Angles are fillet welded to sides for attaching.



**SIMPLIFIES STAINLESS JOBS.** Sinks, trays and processing equipment are welded in less time . . . at less cost with "Lincwelder."

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Result . . . less manhours for quality welding . . . to bring costs down.

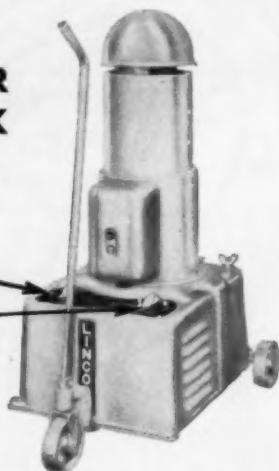
**START A COST REDUCTION PROGRAM NOW.** Only Lincoln has the famous Dual Continuous Control. So have a Lincoln representative show you where and how you can simplify and save money on sheet metal jobs.

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#### SUIT ARC TO JOB

RIGHT TYPE ARC

RIGHT ARC INTENSITY



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**THE LINCOLN ELECTRIC COMPANY**  
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## WASHINGTON LETTER —

cover settlement costs and initial payments for taxes, hazard insurance, mortgage insurance premiums and other prepaid expenses. Builders will be permitted to obtain 85 per cent loans to facilitate construction and financing, pending subsequent sale to qualified owner-occupant purchasers under purchase contracts or lease-option agreements. The maximum term is fixed at 40 years and a service charge would be permitted. Mortgage insurance can be provided under this section for the repair or rehabilitation of dwellings for use by 10 or more families, where the mortgagor is a non-profit corporation, association or organization, public or private, which is regulated under federal or state laws as to rents, charges and methods of operation.

### Some Loans Terminated

The new section 224 authorizes FHA insurance of advances to a mortgagor in an "open end" FHA-insured home mortgage. "Open end" mortgages are mortgages which provide that loans (in addition to the original loan represented by the mortgage) may be made to a mortgagor for improvement, alteration, or repair of the home covered by the mortgage without the necessity of executing a new mortgage. The authority to insure "open end" mortgages would apply only to mortgages covering dwellings for four families or less. The suggested section 609 would terminate authority to insure prefabricated housing manufacturers' loans, because only a few loans have been insured, and experience indicates that the continuation of the program is not warranted. Under section 611, authority to insure blanket mortgages covering 25 or more single family houses is terminated because it is not warranted. Section 128 extends for one year military housing insurance authority, and section 129 terminates Title IX Defense Housing Insurance Authority after July 1, 1954.

### New Charter for FNMA

Section 301, Title III, will rewrite the terms to re-charter the Federal National Mortgage Association, which is the existing federal secondary market facility for home mortgages.

Capitalization is to be subscribed by the Secretary of the Treasury to approximately \$70 million; capital funds also may be accepted from private sources. The association has authority to engage in secondary market operations with respect to marketable home mortgages, which, of course, means the purchase prices would be established at or below the market price. To enable the association to carry out its secondary market operation it will be authorized to issue, upon the approval of the Secretary of the Treasury, obligations for sale to the investing public.



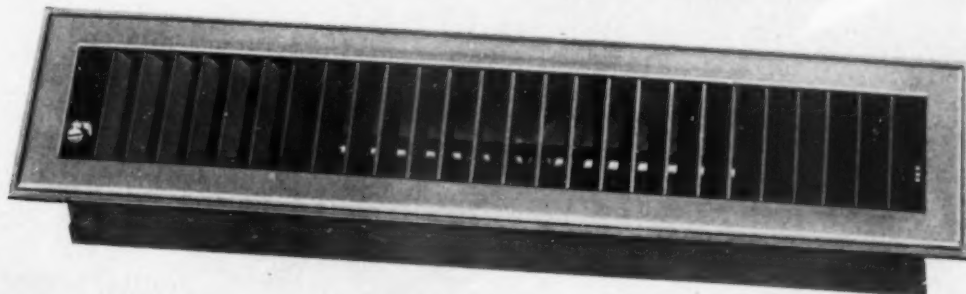


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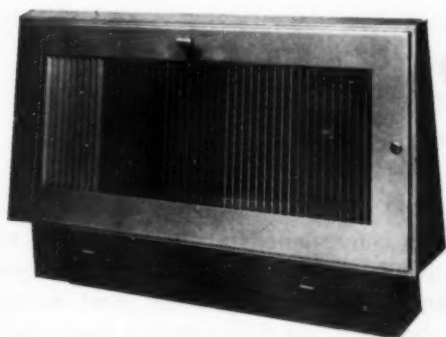
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410**

**U. S. FLOOR  
DIFFUSER  
REGISTER**



The trim, neat floor diffuser for modern homes. Note the graduated-angle diffuser bars that direct a broad, expanding air stream to blanket cold glass and wall surfaces. These are wonderfully efficient diffusers, with a set-screw to permit bal-

ancing air volume at the register without interfering with its closing. The popular  $2\frac{1}{4}$ " x 14" size is shown. (It is useful also as a toe-plate register under cabinets as well as for 4" to 6" round pipe systems.) Other standard sizes are 4" and 6" wide x 10", 12", and 14" long.



**No. 132  $\frac{1}{4}$**

**U. S. Diffuser Base Register**

**For 4"-4  $\frac{1}{2}$ "-5" Round Pipes**

This is the famous U. S. Out-of-Wall design that eliminates large holes in floors or carpets and saves walls, curtains, and drapes from discoloration. It spreads the air efficiently and broadly—gives you the greatest flexibility of location and real savings in register and installation labor costs.



**No. 133  $\frac{1}{4}$**

**U. S. Diffuser Base Register**

**For 6"-7"-8" Round Pipes**

You can't find a better diffuser for Loop, Radial Loop, and Radial perimeter systems than No. 133  $\frac{1}{4}$  Out-of-Wall Base Register. It avoids cutting large intake holes, provides wide upward diffusion, while avoiding soilage of walls, curtains, draperies. Air volume balanced at the register with set-lock.

WATCH in MAY for Announcement of the NEW 1,000 U. S. BASE DIFFUSER — the Best Yet!



**UNITED STATES REGISTER COMPANY**

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When sheet metal jobs call for galvanized, you want quick delivery. And you want a sheet that forms readily . . . gives long-lasting protection against corrosion.

That's what you get when you call Ryerson, dependable quality, fast service.

Our stocks of galvanized sheets are large; we can offer you many gauges in a wide range of pattern sizes, as well as in sizes cut to your order. These sheets have a uniform coating, clean and bright, which will give your jobs permanence plus a pleasing appearance that your customers will appreciate. And one good job always leads to another.

There's convenience in calling Ryerson, too. In addition to galvanized, you can get quick shipment of most every other steel requirement—hot and cold rolled carbon steel sheets, stainless, Ry-ex expanded metal, bar size angles, etc. Just call your nearest Ryerson plant for fast action.

• • •

Need metal-working machinery or tools? Again you can deal with the same convenient source. Your nearby Ryerson plant supplies every type used by sheet metal shops.

## **RYERSON STEEL**

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CHARLOTTE, N.C. • CINCINNATI • CLEVELAND • DETROIT  
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

## "Profit Is Essential to Business"

THE SO-CALLED "sellers' market" that has existed since the end of World War II has disappeared and the buyers of installations in the warm air heating, residential air conditioning and sheet metal field are looking around more before signing on the dotted line. Evidence of this is noted by the Artisan in many ways — one is the increase in inquiries from consumers as to the relative quality of different products, the best type of heating for their particular problem, and the reputation of dealers offering their services. The one item that has stood out in conversations with consumers is the interest in quality as contrasted with low price.

Many dealers, up against high operating costs and diminishing margins, have been faced with two alternatives — to join the price cutters or maintain their business integrity and service to their community. The margins that have been high enough in the past few years when intensive selling campaigns were not required may not be sufficient at this time to support the creative selling programs that are becoming essential. An overhauling of the pricing system would no doubt show many instances where dealers are not providing sufficient funds in the overhead column to conduct the types of selling programs needed.

All too frequently, the cost of conducting a sales campaign is taken from profits, with the hope that increased sales will result in the same amount of profit as was earned in the previous year. It should be remembered that profit is as essential to the operation of a business as are the administration, labor, materials, tools and the shop . . . and that each must be included in the cost of doing business.

When a bid is requested by a prospective customer, it is essential to estimate the job carefully, select the right type and size of equipment, put in every item that will assure the proper functioning of the installation and build a sales presentation around these important facts. Good selling must be based on performance and not on price.

The cutting of prices starts a vicious cycle because one day's cut-price becomes the next day's standard, thus increasing the opportunity for prospective customers to resort to the evil practice of bid shopping.

HEARD OFTEN at recent state sheet metal contractors' conventions — "I've seen the pathetic picture of what happens to the consistently low bidder; I'm personally interested in what happens to the consistently high bidder."

To avoid being consistently in the "too high" bid bracket, a dealer must of course use techniques that will promote efficiency and reduce operating costs, employ modern methods for estimating so that all job and overhead costs can be properly allocated, have the proper, up-to-date tools and equipment for both shop and field use, and give careful attention to training and retaining high caliber personnel.

# The Artisan Reports on



## WINDOW AIR CONDITIONERS

THE WARM AIR heating and residential air conditioning dealer has many means at his disposal to meet the comfort needs of his customers — both in winter and in summer.

There are many methods by which a residence may be summer air conditioned. Choosing the right one for a particular case is largely a problem for someone who knows air distribution, knows about mechanical installations in residences, and — because of the intimate relationship between summer cooling and winter heating — knows residential heating.

The type of cooling installation for any particular application depends on a number of factors. Because of his skills, facilities and experience, the warm air heating and residential air conditioning dealer is in the best position to make a thorough survey of each location and to specify the equipment best suited to meet the conditions of the particular installation — whether it be a multiple central cooling package job, or a one room window air conditioner. Thus, he can give the customer what the customer wants and needs.

### Many Ways to Cool a Home

**1** One way to cool a home is to use a year 'round central air conditioning "package," providing means for

heating or cooling the air, humidifying it or dehumidifying it, filtering it and circulating it through ducts to the places where it's needed. Such a package replaces the furnace which would otherwise be installed in a new home. It might also replace the old furnace in an existing home — but the existing ducts would be used for distributing the air.

Such year 'round packages can be fired with either gas or oil. In addition, some of them employ instead the heat pump principle for heating. In this case, electric energy driving the refrigeration compressor motor is used to actually pump heat from a source such as outdoor air, the earth, or a water supply to a higher temperature level suitable for heating the house.

**2** It might well be desirable — and in thousands of cases it is — to use (either in a new home or an existing home) a regular warm air heating furnace. Cooling is easily added to an installation of this kind by employing one of the central cooling "packages" which are available from many air conditioning or furnace manufacturers. Such a package provides components for cooling and dehumidifying the air, and for filtering it and circulating it — unless the filters and blowers already incorporated in the heating part of the installation can be used also for the cooling cycle.



**3** Let's consider that for one reason or another we don't want to use a complete year 'round or "summer cooling only" package. To add cooling to either a new or existing home, we can install cooling coils in the ductwork, supplying refrigerant to them from a compressor located in a convenient spot.

**4** Or we might want to use chilled water — rather than direct expansion refrigerant — in the cooling coils in the duct. We then install a refrigeration compressor supplying refrigerant to a water chiller, which in turn supplies the chilled water to the duct coils.

**5** Instead of a separate compressor and water chiller, we may well decide to use a packaged water chiller, which incorporates in one unit the compressor, motor, heat exchanger and other components. Into it we put electric energy and condensing water — out of it we get chilled water to circulate to the cooling coils installed in the ductwork.

Such chillers also may be gas or oil fired, using the absorption principle instead of a motor driven compressor.

[In addition to the water we chill to circulate to the cooling coils to (in turn) cool the air, any refrigeration machine must also have a condensing medium. Sometimes this is air, but more often it is water.

Where the supply is ample and the cost not too high, water from the city mains may be used, wasted to the sewer, or disposed of by some other means. In many cases, however, this water must be conserved. For this purpose, we use an evaporative condenser, or a small cooling tower to supply the condensing water, cool it after its use and recirculate it.]

**6** In many parts of the country, it gets good and hot in the summer, but the humidity isn't as high as it is elsewhere. Where the outdoor air conditions are right, it's entirely practical — there are thousands of installations that demonstrate it — to cool a home without mechanical refrigeration, thus saving on equipment and operating costs. This is done by evaporating water into the air stream, thus lowering the temperature of the air and at the same time increasing its humidity (but not too greatly.)

The evaporative cooler thus represents another means for cooling a home. It has a porous pad which is kept saturated with water. The air for the house passes through the pad or spray, evaporates water, and is thereby cooled to comfortable levels.

**7** The various types of equipment so briefly described above are used for central cooling of a residence, with distribution of the air to all the rooms using the same ducts through which the warm air in winter is conveyed.

There are of course many different units which can be installed in a room of a house to cool that room individually. Thus, we have another method of cooling a home, by using either a window-mounted or a floor-mounted unit in each room to be cooled — perhaps one or more bedrooms, the living room, the study.

Many articles appearing in the Artisan in recent

## **Warm Air Heating Dealers Expect To Sell More Window Units This Year**

**A QUICK** check just the other day with some of the American Artisan's subscribers indicates that warm air heating dealers expect their sales of window air conditioning units to be substantially greater this year, even when compared to the large number of sales in '53. Here are a few typical quotes:

**A sheet metal works** — "We estimate we will sell 50 per cent more units than we did last year."

**A warm air heating dealer** — "We believe we will sell at least 50 of these units this spring — more if we can get them."

**A warm air heating and ventilating contractor** — "We plan — and expect — to sell twice as many of the window air conditioning units as we did last year."

**A warm air heating dealer** — "We expect that we will sell between 60 and 70 units this year."

**A warm air heating and sheet metal contractor** — "We sold 80 window air conditioning units in 1953, and expect to sell four times that number this year. We are setting our sales program toward that goal."

**A warm air heating dealer** — "We sold 100 window cooling units in 1953. Our plans are to sell 200 units this year if the manufacturers can supply us for all of the orders we will get during the peak season. We had 15 orders from our customers as early as March for installation at any time before the cooling season."

**A warm air heating dealer** — "We sold eight window air conditioners last year and confidently expect to sell 24 of them this summer."

**Residential air conditioning department of a sheet metal contractor** — "Our department sold 50 window cooling units in 1953 and we believe we will sell 100 units this year — an increase of 100 per cent."

**A heating and sheet metal company** — "We expect to sell about 150 window air conditioners this summer — an increase of more than 300 per cent over the number sold last year."

**A warm air heating and sheet metal contractor** — "We sold 30 units last year and expect to sell between 50 and 100 this summer. We think window conditioners will be a terrific help to future complete home air conditioning sales."



SALES AIDS are used to develop the prospect's interest in summer cooling



ADEQUACY OF electric power supply is checked at nearest outlet

months have been devoted to the selling, selection and installation of these various types of cooling equipment for homes. This month, we're primarily concerned with the window units.

### Why Window Units Are Bought

There are many reasons for a purchaser to buy a window unit (or units) instead of a central cooling system for his home. For example, he may have a "wet heat" system for heating, with no ducts already installed to distribute the air economically from a central cooling system throughout the house. Perhaps he wants to cool only one or two rooms of his house, instead of having a complete job done. Perhaps, too, he might like to have the whole house cooled but feels he can afford only cooling for a room or two. He may be renting his house or apartment, and may therefore feel he should invest only in the more portable type of equipment. Whether or not the available power supply is sufficient for central cooling must also be considered (and must not be overlooked entirely in the case of room units.)

Finally, he may not yet be completely sold on the many advantages of cooling his home and will want to try it out at minimum expense with a window unit or two.

The warm air heating and residential air conditioning dealer is best equipped to meet the customer's needs. He's the man to whom the public looks for competent advice on home comfort problems both winter and summer. He is equipped to properly select and install all the types of residential cooling systems, and is therefore not committed to recommending only one of the several methods available. He has had a wide experience in installations of mechanical equipment in homes—equipment which becomes a part of the home, which must operate to the satisfaction of the owner, and which must

be lived with 24 hours a day, day in and day out.

From the dealer's viewpoint, the window cooling unit is a very popular method of cooling part of a home or apartment, and thus represents an important type of equipment to round out the complete picture of residential air conditioning methods. As outlined above, many prospective customers will have good reasons for wanting a window unit or units rather than some other type of equipment. The dealer should be in position to satisfy the needs of such customers, and to offer a complete residential air conditioning service to the public.

Another benefit — still from the dealer's viewpoint — is that many a sale of a window unit should ultimately lead either to the sale of additional units as the benefits of cooling a single room become fully appreciated, or to the sale of a complete central cooling system for the entire house.

Too, sale of a window unit to a customer now renting may well result at some future date in a further sale of more units or more complete cooling equipment when — and if — that customer buys or builds a house.

### A Million To Be Sold This Year?

A quick look at the national market indicates that perhaps a million window air conditioners will be bought in 1954. There were some 1,055,000 such units shipped in 1953. This figure is three times or more greater than the number produced in 1952. All of the units shipped in 1953 were not sold, as part of the 1953 production occurred after the peak demand in the months of May, June, July and August. However, an analysis of the field indicates that approximately 800,000 units were sold. The estimated average installed price of each unit was about \$390. This means that the 1953 window air conditioner market had a retail value of about \$312 million.



PROSPECT IS encouraged to participate in the selection of the conditioner location



ROOM IS SURVEYED for floor area, quantity of glass and orientation

With a stock of approximately 255,000 units from late 1953 production plus early 1954 production, it is estimated that there will be available, for summer peak sales this year, approximately 1 million units — maybe more.

### Getting Prospects, Closing Sales

Information presented elsewhere in this report deals with some of the recommended procedures for selecting and installing window air conditioners. But first, let us consider methods used to develop prospects, to close sales and to secure financing.

Perhaps the first step is to let the public know that window air conditioning units are among the services offered by the warm air heating and residential air conditioning dealer. This can be done by including in the dealer's newspaper advertisements illustrations of the units handled and explanations of the engineering experience of the dealer which is available for the selection and installation of window air conditioners. Sales leads may be developed from direct mailing pieces consisting of the literature supplied by manufacturers, supplemented with personal letters that refer to the newspaper advertisements, invitations to visit the display room, etc.

Names of prospects can be obtained from the company's files and from city directories and telephone books. Effective mailing programs can start early in the spring and continue throughout the summer months at the rate of a mailing about once every four weeks or oftener.

Once the prospect has shown interest and the salesman has called, the approach should be pointed toward the individual so that the prospect will feel that it is a personal interest in his comfort that has prompted the call.

### Making the Sale

When selling a man, it is perhaps well to discuss the performance of the equipment, point out mechanical features and how his family can enjoy comfort during the daytime while he is away — perhaps in an air conditioned office! The prospect's pride in ownership of a cooling unit shouldn't be neglected as a sales point. Also, it should be brought out that sleeping comfort on hot and humid nights is assured when the bedroom is conditioned, and that sufferers from hay and rose fever find sanctuary from pollen laden air where the air is filtered and cooled.

When a woman is the prospect, it is perhaps best to talk the language she best understands — the beauty of the cabinet, how it harmonizes with its surroundings, the comfort it will provide, the economy of the unit and the ease with which the payments can be made. Other good points to bring out are the reduction in street noises brought about by keeping the windows closed and the subsequent reduction in the amount of work required to keep the room free of dust.

If the occasion arises where the customer points out that another unit can be bought for \$20 to \$30 less, it is a good indication that he isn't convinced of the other product's ability to provide the comfort he is seeking. Often, a comment of this kind by the customer can be changed into a strong point for your product by showing that the suggested saving is less than 10 per cent of the price and that there should be no compromise in satisfaction or quality for such a minor difference in price.

The good salesman can always build his personalized sales approach around a recognized outline that includes:

*Know your product:* Radiate assurance of the product you represent, know its capabilities as well as its limits . . . but don't stretch either. Have the answers that



HEAT GAIN calculations are made and equipment selected to meet the requirements



ORDER FORM is signed by customer while salesman explains the details

the prospect wants — even try to anticipate such questions and answer them before they can be asked by the prospect. If questions out of the ordinary are asked and require technical explanation, make a note and assure the customer that the answer will be obtained for him.

**Build up your company:** Speak of the company's reputation, its record for good service, its association with recognized public groups (i.e., associations, civic clubs and municipal offices), its interest in current public activities and special events, and mention names of people who can be used as references.

**Understand the prospect:** Anticipate the problem that the prospect is endeavoring to solve — enter into its solution as if it were your own, determine the kind of business he is engaged in, what his hobby is. Look for his point of view and locate the common ground between the prospect and his neighbors.

**Encourage the prospect to help:** Solicit the prospect's aid in selecting the type of equipment by offering information about different models of the same capacity, locating the equipment, measuring the room and deter-

mining the physical aspects of the environment.

**Know when to close:** Keep the order blank nearby and have it ready when the customer has indicated his willingness to place the order. Make your exit as soon as possible after the order is signed. Leave behind only promises you know can be fulfilled.

### Financing Sales

The financing of the sale — if necessary — can be handled in any of the preferred methods now employed by banks and other lending groups. However, it is a good businessman who invites his banker (or his representative) to attend sales meetings to see how the business is conducted and to make them feel a part of the transaction. Often these people can offer some new ideas that eventually mean better returns for the dealer if they understand the product and the merchandising methods employed.

Financing institutions are always interested and are glad to be associated with a company that gives its customers service and satisfaction.

## Selecting and Installing Window Air Conditioners

WINDOW AIR conditioner installations should be as carefully estimated and selected as any other piece of equipment installed by the warm air heating and residential air conditioning dealer. Presented herein is a sample selection procedure, and an outline for making a good installation, which is based on recommendations from several sources.

When surveying the premises, note the following data for the load estimating form:

1. Wall exposure to the sun.
2. Artificial shade (trees, awnings, blinds, sun

screens, sun louvers, etc.).

3. Wall construction.
4. Wall insulation.
5. Window areas.
6. Window opening (large enough to accommodate the unit selected?)
7. Electrical power available.
8. Floor area.
9. Ceiling area.
10. Use of space above the ceiling.
11. Occupancy (maximum).



## DOZENS OF MANUFACTURERS OF WINDOW AIR CONDITIONING UNITS

*THE NAMES and addresses of manufacturers of window air conditioners, as given in the January 1954 Directory Section of American Artisan, plus the names of other manufacturers who have since advised the Artisan of the availability of units for distribution through warm air heating and residential air conditioning dealers, are given in the following list. As additional announcements are made by other manufacturers, they will be reported in our Equipment Developments department, which appears monthly.*

- |  |  |
|--|--|
| <p>Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.<br/>Air Conditioning Engineering Co., 44 First St., Cambridge 41, Mass.<br/>Airtemp Div., Chrysler Corp., 1600 Webster St., Dayton 1, O.<br/>Amana Refrigeration, Inc., Amana, Ia.<br/>Artkraft Mfg. Co., Lima, O.<br/>Bard Mfg. Co., Evansport Rd., Bryan, O.<br/>Blissfield Mfg. Co., Blissfield, O.<br/>Bryant Heating Div., Affil. Gas Equipment, Inc., 17825 St. Clair Ave., Cleveland 10, O.<br/>Burnham Corp., Irvington, N. Y.<br/>Carrier Corp., 308 S. Geddes St., Syracuse 1, N. Y.<br/>Cauhorn Distributing Co., 9999 Broadstreet, Detroit 4, Mich.<br/>Coolerator Co., New Garrick Bldg., Duluth, Minn.<br/>Cool-Ette, Inc., 20080 Jas. Couzens Highway, Detroit, Mich.<br/>Crane Co., 836 S. Michigan Ave., Chicago 5, Ill.<br/>Croslev. Avco Mfg. Corp., Appliance &amp; Electronics Div., 1329 Arlington St., Cincinnati 25, O.<br/>Curtis Refrigerating Machine Div., Curtis Mfg. Co., 1946 Kienlen Ave., St. Louis 20, Mo.<br/>Dayton Pump &amp; Mfg. Co., 500 N. Webster St., Dayton 1, O.<br/>Dearborn Stove Co., 1700 W. Commerce St., Dallas, Tex.<br/>Deepfreeze Appliance Div., Motor Products Corp., North Chicago, Ill.<br/>Deering Air Conditioning Co., 1069 Celestial, Cincinnati, O.<br/>Electriglas Corp., Bergenfield, N. J.<br/>Emerson Electric Mfg. Co., 8100 Florissant Ave., St. Louis 21, Mo.<br/>Emerson Radio and Phonograph Corp., 111 Eighth Ave., New York 11, N. Y.<br/>Fedders-Ouigan Corp., 57 Tonawanda St., Buffalo 7, N. Y.<br/>Forston Co., The, 1400 Conti St., Houston 2, Tex.<br/>Fresh'nd-Aire Co., 221 N. LaSalle St., Chicago 1, Ill.<br/>Friedrich Refrigerators, Inc., 1117 E. Commerce, San Antonio, Tex.<br/>Frigid, Inc., 128-168 Thirty-Second St., Brooklyn 32, N. Y.<br/>Frigidaire Div., General Motors Corp., 300 Taylor St., Dayton 1, O.<br/>General Electric Co., Air Conditioning Div., 5 Lawrence St., Bloomfield, N. J.<br/>Gibson Refrigerator Co., 515 W. Williams, Greenville, Mich.<br/>Hotpoint Co., 5600 W. Taylor St., Chicago 44, Ill.<br/>Hunter Fan &amp; Ventilating Co., 400 S. Front St., Memphis 2, Tenn.<br/>Iron Fireman Mfg. Co., 3107 W. 106th St., Cleveland 11, O.<br/>Jordon Refrigerator Co., Inc., 58th St. &amp; Grays Ave., Philadelphia 43, Pa.<br/>Kauffman Air Conditioning Corp., 4505 Olive St., St. Louis 8, Mo.</p> | <p>Kelvinator Div., Nash-Kelvinator Corp., 14250 Plymouth Rd., Detroit 32, Mich.<br/>King Refrigerator Co., 7602 Woodhaven Blvd., Glendale 27, N. Y.<br/>Larkin Coils, Inc., 519 Memorial Dr., S. E., Atlanta 1, Ga.<br/>Lipman Refrigeration Div., Yates-American Machine Co., Beloit, Wis.<br/>Lombard Mfg. Co., Youngstown, O.<br/>Magic Chef, Inc., 1641 S. Kingshighway Blvd., St. Louis 10, Mo.<br/>Majestic Major Appliance Corp., Lima, O.<br/>McQuay, Inc., 1600 Broadway, N. E., Minneapolis 13, Minn.<br/>Mitchell Mfg. Co., 2525 N. Clybourn Ave., Chicago, Ill.<br/>Mueller Climatrol Div., Worthington Corp., 2005 W. Oklahoma Ave., Milwaukee 15, Wis.<br/>Norge Heat Div., Borg-Warner Corp., 346 E. South St., Kalamazoo, Mich.<br/>Packard-Bell Co., Bellaire Room Air Conditioning Div., 1111 Wilshire Blvd., Los Angeles 17, Calif.<br/>Payne Furnace Div., Affil. Gas Equipment, Inc., 801 Royal Oaks Ave., Monrovia, Calif.<br/>Perfection Stove Co., 7609 Platt Ave., Cleveland 4, O.<br/>Philco Corp., Tioga and C Sts., Philadelphia 34, Pa.<br/>Quiet-Heat Mfg. Corp., 46 Oliver St., Newark 5, N. J.<br/>RCA Victor Div., Radio Corp. of America, Camden, N. J.<br/>Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.<br/>Rheem Mfg. Co., 570 Lexington Ave., New York 22, N. Y.<br/>Robbins &amp; Myers, Inc., 1345 Lagonda Ave., Springfield 99, O.<br/>Servel, Inc., 119 Morton Ave., Evansville 20, Ind.<br/>Sterling Air Conditioning Corp., 2222 South Boulevard, Charlotte, N. C.<br/>Stewart-Warner Corp., U.S. Machine Div., Lebanon, Ind.<br/>Sub-Zero Freezer Co., Inc., Route 3, Box 2017, Madison, Wis.<br/>Sutton Corp., O. A., 1812 W. Second St., Wichita 2, Kans.<br/>Tele King Corp., 601 W. 26th St., New York, N. Y.<br/>Typhoon Air Conditioning Co., Inc., 794 Union St., Brooklyn 15, N. Y.<br/>Tywel Mfg. Corp., 5702 First Ave., Brooklyn 19, N. Y.<br/>United Conditioning Corp., Croton Falls, N. Y.<br/>U. S. Air Conditioning Corp., Como Ave., S. E. at 33rd, Minneapolis 44, Minn.<br/>Victor Products Corp., 901 Pope Ave., Hagerstown, Md.<br/>Viking Air Conditioning Div., National Radiator Co., 5601 Walworth Ave., Cleveland 2, O.<br/>Welbilt Stove Co., Inc., Maspeth 78, N. Y.<br/>Westinghouse Electric Corp., Electric Appliance Div., 653 Page Blvd., Springfield 2, Mass.<br/>Worthington Corp., Harrison, N. J.<br/>York Corp., Roosevelt Ave., York, Pa.</p> |
|--|--|

12. Outside air infiltration possibilities.
13. Electrical appliances (TV, lamps, etc.)
14. Room dimensions.
15. Geographical location.
16. Floor plan of room.
17. Location most suitable for conditioner.

Some load estimating sheets use engineering factors based upon average conditions. Other estimating forms draw upon factors selected for specific outdoor design dry and wet bulb conditions. Still others are based upon design outdoor dry bulb conditions for certain areas ranging from 90 to 105 F.

All estimating forms tend to consider the essential

features necessary for good selection and are based upon engineering factors that will assume adequate capacity under the conditions existing at the location if the installation follows the manufacturer's recommendations.

A sample load estimating form with instructions for its use are given on pages 56 and 57.

A suggested installation procedure, based upon practices in use by dealers and on recommendations from a number of sources, is as follows:

1. Verify that the power supply at designated outlet is the same as the specification plate rating on the conditioner.
2. Remove all shipping slats and bolts.

3. Place cabinet frame or cradle support on window sill, center and fasten.

4. Install cradle knee braces to support the condensing unit portion of the conditioner. An outward pitch of  $\frac{1}{2}$  to  $\frac{3}{4}$  in. is often recommended to provide proper drainage from the cooling coil.

5. Raise packaged conditioner into position. (The  $\frac{3}{4}$  hp unit weighs in the neighborhood of 200 lb — two men are required for this operation.)

6. Remove condensing unit hold-down bolts.

7. Fasten the conditioner in place.

8. Measure the space to the right and left of the conditioner and lay out on a piece of building board or plywood the shape of the wing pieces. Cut the wing pieces to the specifications.

9. Fasten wing pieces into position and seal with gasket material or compound.

10. Place the sill sealing gasket beneath the unit.

## COOLING LOAD ESTIMATE FORM

### For Room Air Conditioners

#### Section 1. Instructions

1.10 This *Cooling Load Estimate* is suitable for comfort air-conditioning jobs not requiring specific conditions of temperature or humidity and is recommended practice for members of the Room Air-Conditioner Section of the Air-Conditioning and Refrigeration Institute.

1.20 Summer outside design temperatures are listed for the principal cities of the United States in the *Heating, Ventilating, Air Conditioning Guide*, published by The American Society of Heating and Ventilating Engineers. This form may be used for all cities in the United States except the few where the outside design temperatures are appreciably above 95 F dry bulb and 78 F wet bulb. In these cases the load estimate should be modified or other forms used.

1.30 Insert the information called for in the job identification lines at the top of the Estimate Form.

1.40 Measure and sketch the room, showing the location and size of windows, doors, and other openings. Carefully determine directions and indicate north on the sketch by an arrow. For most jobs, each square of the sketch can represent one foot of room measurement.

1.50 The numbers of the following paragraphs refer to the item numbers of the Estimate Form:

1. Under *Quantity*, insert the total square feet of window area for the unshaded exposure having the largest cooling load. For windows shaded by inside shades or inside venetian blinds use the factor for *Inside Shades*. For windows shaded by outside awnings or by both outside awnings and inside shades (or venetian blinds), use the factor for *Outside Awnings*. Only one number should be entered in the right-hand column for Item 1.

*Note:* For all items, the *Quantity* (in this case, the area in square feet), multiplied

by the proper *Factor*, gives the load for that item in *Cooling Units*.

2. Insert the total square feet of window area of all windows not included in Item 1.
3. On Line 3a or 3b, insert the length of the wall that had the largest sun load in Item 1. The total length of all walls and partitions not included in Line 3a or 3b should be inserted on Line 3c. (The factors are based on a wall 9 feet high and are applicable to walls of usual heights and average construction. An uninsulated frame wall or a masonry wall 8 inches or less in thickness is considered *Light Construction*. An insulated frame wall or a masonry wall 12 inches or over in thickness is considered *Heavy Construction*.)
4. Insert the total square feet of roof or ceiling area on Line 4a, 4b, 4c, or 4d. (Use one only.)
5. Insert the total square feet of floor area. Neglect this item if floor is directly on ground or over unheated basement.
6. Insert the number of people who normally occupy the space to be air-conditioned. The factor includes the normal cooling load per person and approximately 15 cfm of ventilation air per person.
7. Insert the total number of watts for lights and electrical equipment that will be *in use* when the room air-conditioner is turned on and the sun is shining.
8. Insert the width of any door or arch that is continuously open to an unconditioned space.
9. Add the loads of Items 1 through 8. This is the total load in cooling units (Btu per hour). A room air-conditioner or room air-conditioners with capacity equal to or greater than this load should be selected.

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# COOLING LOAD ESTIMATE FORM FOR ROOM AIR CONDITIONERS

## Section 2. Estimate Form

Recommended Practice for Members of Room Air-Conditioner Section of Air-Conditioning and Refrigeration Institute. This estimate is suitable for comfort air-conditioning jobs not requiring specific conditions of temperature and humidity.

Customer..... Buyer.....

Address..... Space to be used for.....

Estimate by..... Date..... Approval..... Date.....

ITEM	Quantity	Factor		Cooling Units
		Inside Shades	Outside Awnings	
<b>1. WINDOWS EXPOSED TO SUN, FACING*</b>				
a. East, Southeast, or South . . . . .	.....sq ft	45	25	
b. Southwest . . . . .	.....sq ft	65	40	
c. West . . . . .	.....sq ft	100	60	
d. Northwest . . . . .	.....sq ft	35	25	
*Use only the exposure with the largest load.				
<b>2. WINDOWS FACING NORTH OR IN SHADE (Include all windows not included in Item 1.)</b>	.....sq ft	14		
<b>3. WALLS (based on lineal feet of wall)</b>				
a. Light construction, exposed to sun* . .	.....ft	90		
b. Heavy construction, exposed to sun* . .	.....ft	50		
c. Shaded walls or partitions (Include all walls not included in 3a or 3b.) . . .	.....ft	30		
*Use for only that exposure used in Item 1.				
<b>4. ROOF OR CEILING (Use one only.)</b>				
a. Roof, uninsulated . . . . .	.....sq ft	16		
b. Roof, with one inch or more insulation .	.....sq ft	7		
c. Ceiling, with occupied space above . .	.....sq ft	3		
d. Ceiling, with attic space above . . .	.....sq ft	10		
<b>5. FLOOR (Neglect floor directly on ground or over unheated basement.)</b>	.....sq ft	3		
<b>6. PEOPLE AND VENTILATION—Number of people</b>	.....	900		
<b>7. LIGHTS AND ELECTRICAL EQUIPMENT IN Use</b>	..... watts	3		
<b>8. DOORS AND ARCHES CONTINUOUSLY OPEN TO UNCONDITIONED SPACE (lineal feet of width)</b>	.....ft	300		
<b>9. TOTAL LOAD in cooling units to be used for selection of room air conditioner (s)</b>	XXXX	XXXX		

\*ROOM SKETCH

\*Indicate North by Arrow





**ELECTRIC POWER** supply is checked for voltage, phase and ability to handle the load



**CABINET FRAME** is mounted with 1/2 in. outward pitch for draining evaporator compartment

11. Place the window sash sealer gasket and pull the window down tight and fasten the sash by installing the upper sash sealing gasket.

12. Fasten front grille in place.

13. Plug unit into power supply and check operation of the unit for noise, functioning of control, condensate drainage, air delivery temperature and grille louver adjustment.

14. Instruct the customer in the operation of the equipment and explain how unusual conditions can affect its operation (such as more people in the room than were estimated or failure to reduce the sun load). Point out the filter and explain how to tell when it requires replacement.

15. Leave with the customer the dealer's name, address and telephone number with an explanation of the service agreement and what it covers.

### Answering Service Calls

The servicing of window unit complaints requires a complete check of the installation to make sure that conditions other than those which the original estimate covered do not exist. Most service calls are due to noise, which can usually be uncovered during such an inspection and found to be due to either vibration or customer alterations of the original sound deadening gasket.

A contributing factor to service complaints is an unusual load on the conditioner because of excessive quantities of outside air entering the conditioned room.

Another frequent cause of service calls is dirty filters, which result in complaints of inadequate cooling.

On other calls where inadequate cooling is charged, the following test will verify the performance of the cooling unit:

Place a service thermometer at the center of the intake

air grille and another at the center of the discharge grille. After about five minutes observe the reading on both thermometers. If a temperature differential of between 15 and 20 F exists, it is an indication that the unit is performing according to its rated capacity.

The installation and servicing of window air conditioners by warm air heating and residential air conditioning dealers can be handled in several ways. For example, one of the more popular arrangements is for the dealer to handle the installation and servicing with his own staff. In other cases, he may prefer to make the sale and then contract with some other firm that specializes in this type of work. The case illustrated here is an example of the latter. In this instance, the sale was made by the Prizant Sheet Metal Works and the installation was carried out by Murphy-Miller, Inc., both of Chicago.

One prominent manufacturer recently reported the results of a survey covering the service history of 1082 window air conditioners. This survey revealed that an average of 0.669 service calls per unit per year was required. An analysis indicated that 32 per cent were classified as product failure but that this figure was reduced to 18 per cent, as poor installation practices had resulted in 14 per cent (of the total) of these calls being due to excessive noise that could have been eliminated if care had been exercised by the installation crew.

Of the actual component failures, the fan motor was the most prominent, with 2.9 per cent of the total service calls. Under "normal maintenance" (such as oiling fan motors, changing filters and cleaning the condenser) came 42 per cent of the reasons for service calls.

An analysis of the complete tabulation of the results observed from this survey indicated that while the "calls per year per unit" were considerably less than on other similar equipment, the figure could be improved by more effort on the part of the installation crew.





PLACEMENT OF conditioner requires two men. Drop cloth is used to protect furniture and floor during installation



FILLER PANELS fitted into a metal rail provide a good seal on each side of the conditioner

## Electrical Wiring for Window Air Conditioners

EVERY SALE OF a window air conditioner is based upon the availability of electrical power at a point near the proposed unit location. Without sufficient wiring to handle the additional electrical load imposed upon the house circuits, the dissatisfaction of the customer is assured. If the dealer ignores the requirements of the room as indicated by the survey sheet and attempts to install a unit of such capacity that it won't operate on the power available, he will find that his reputation and his sales will decline together.

The problem of inadequate house wiring is not a local one, according to the National Adequate Wiring Bureau. It estimates that there are approximately 20 million homes now in need of better electrical distribution systems. Recent meetings of local electric utility companies in several cities with heating and air conditioning dealers; consulting engineers; architects; general contractors; mortgage bankers; FHA, VA and electrical inspectors; and representatives of real estate companies have been held to see what can be done to help increase the sale of window and other types of air conditioning units despite the problems presented by inadequate wiring.

An actual example of how inadequate wiring hampers sales of air conditioning units — typical of many such instances — occurred last summer. The service manager of a television repair company wanted to install a window air conditioner for the living room of his hot water heated, two year old home. Through his business connections, he could buy a  $\frac{3}{4}$  hp unit at a discount and wanted to know if it would be large enough. Fortunately, he asked for competent advice from a neighbor in the air conditioning business.

Upon checking the load estimate for the room, it was found that a  $\frac{3}{4}$  hp unit would be the correct size. But

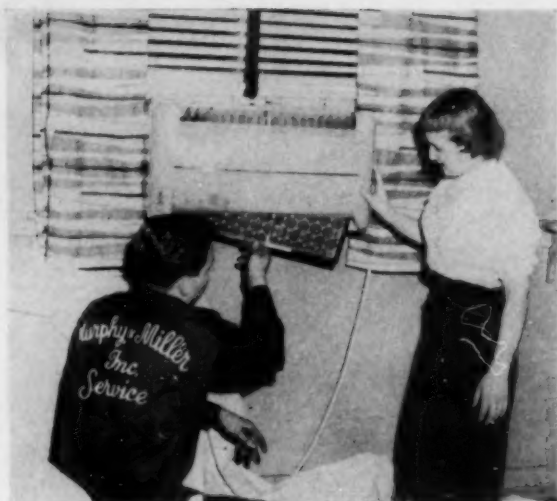
an examination of the electrical circuit for the living room disclosed that the largest unit that could be installed would be a  $\frac{1}{3}$  hp model. The solution would be the addition of a complete circuit with sufficient capacity to operate the size of unit required to do the cooling job.

The outcome of this case was the purchase of a  $\frac{1}{3}$  hp unit for installation in the bedroom, where geographical orientation and other factors permit this size of unit to handle the load.

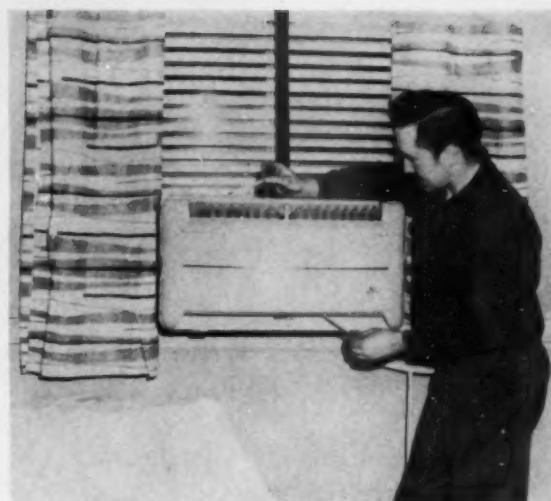
This example indicates not only the importance of adequate wiring, but also the importance — to the customer, to the manufacturer, and to the industry in general — of sales and installations of air conditioning units by dealers competent to select the correct size and to check the power requirements.

To determine whether electric wiring is adequate it is necessary to check the total load connected on a branch circuit. The National Electrical Code states that if the circuit supplies any motor operated equipment, the total load on any circuit shall not exceed 80 per cent of the rating of the circuit. Branch circuits in homes are wired with No. 14 wire and protected with 15 ampere fuses. Therefore, the total permissible load on such a circuit, applying the above rule, must not exceed 1440 watts. The code also permits special purpose heavier circuits of 20 ampere capacity in dwelling units, but they must be provided with a polarized receptacle in order that they can be used only for the specific purpose intended.

To summarize, in order to check for adequate wiring, add all the load connected on a circuit — including lighting, miscellaneous appliances and the air conditioning unit. The total load for a 15 ampere circuit should not be more than 1440 watts.



INSTRUCTIONS to the customer include information on how to replace the filter



COOLING CAPACITY can be determined by measuring the inlet and outlet air temperatures

### Not Air Conditioning's Fault

Inadequate wiring is not, of course, the "fault" of air conditioning, but has been brought about by the increasing use of electricity for many home purposes in recent years.

The meeting in the St. Louis area, sponsored by the Union Electric Co. of Missouri, brought out the factors involved in the situation there and the steps that company feels should be taken to correct it. The recommendations are believed to be largely typical of those formulated or being considered in many other parts of the country.

When the meeting was announced, the utility company stated that, in its experience, air conditioning units with power factors of less than 90 per cent not only affect the quality of electric service, cause customer difficulties and unnecessary wiring expense in many cases, but also tend to limit the market opportunity for room and window air conditioners since so many buildings still have only two wire, 120 volt service.

A memorandum was distributed at the meeting providing information concerning electric service requirements for the proper installation of window and room air conditioning units. It is not intended to replace any instructions or procedures issued by manufacturers on the installation of their own equipment, nor does it supersede any utility regulations or inspection ordinances which may apply in certain areas or municipalities. It is intended as a guide. Pertinent parts are reproduced here:

### Voltage Requirements

All units in excess of  $\frac{3}{4}$  hp should be connected to 240 volt (or 208 volt) circuits. Units of  $\frac{3}{4}$  hp and smaller may be connected to 120 volt circuits provided they are designed so that the starting inrush currents

do not exceed 46 amperes for manually controlled units or 23 amperes for automatically controlled units, and further provided that the full load current is within the capacity limitations of the circuit on which the unit is to be operated.

Those room air conditioners with automatic temperature controls which stop and start the motors generally have starting currents in excess of the 23 amperes permissible for use on 120 volt circuits. This causes voltage fluctuation on the customer's service, undesirable light flicker and interferes with television reception. Unless the manufacturer supplies a starting current limiting device to keep the starting current at or below 23 amperes for 120 volt operation, such units should be purchased for 240 or 208 volt operation. When the only service available is 208 volts, the manufacturer of the equipment should be consulted regarding the proper motor to supply, as a standard 230 volt motor may not give satisfactory performance.

### Circuit Requirements

It is essential to determine that the electrical circuit is adequate and safely protected. Overloaded wiring is a potential fire hazard. Phantom testers, which approximate the effect of the room air conditioner, are available for obtaining a voltage indication without connecting the unit.

Attention is directed to the fact that the National Electrical Code, Paragraph 2125A — Motor Operated Appliances, states: "The total load shall not exceed 80 per cent of the branch circuit rating if motor operated appliances are supplied."

Room air conditioners of  $\frac{3}{4}$  hp or less can usually be installed on existing 15 ampere general purpose circuits if they are equipped with motors to operate at 90 per cent power factor under full load conditions, provided

the total load on the circuit including the full load running current of the room air conditioner does not exceed 12 amperes.

Motors 1 hp and larger will always require heavier wiring and should be installed on 208 or 240 volt circuits. Exceptions to this are those units which have twin half horsepower motors instead of a single 1 hp motor. Such units should be equipped with a controlling device that will prohibit simultaneous starting.

### Need Better Power Factor

Many room air conditioners now on the market have power factors of 70 per cent or less, according to the memorandum. The growing use of these low power factor room air conditioners is resulting in needlessly overloading customer and company circuits and facilities and is resulting in low voltage conditions at the unit which give rise to customer dissatisfaction with room air conditioners and to increasing service problems, Union Electric says.

Service rule No. 2.21 of the electric service manual for the Union Electric system states:

"All lighting equipment, motor driven equipment and appliances shall have such characteristics or be equipped with corrective devices so as to enable the company to maintain a satisfactory standard of service. In the case of low power factor, high motor starting current, violently fluctuating loads, etc., the company reserves the right to require the customer to install, at his own expense, apparatus to correct the objectionable condition.

"The company will be glad to cooperate and supply engineering advice without cost to find a satisfactory method to correct such unsatisfactory and disturbing conditions."

The combination of low power factor and lack of diversity in the operation of room air conditioners is adversely affecting the quality of the company's service, and the company is, therefore, notifying air conditioning manufacturers that units with full load power factors below 90 per cent do not fall within the requirements as stated in service rule No. 2.21 quoted above.

### Interim Policy

The company realizes that until the manufacturers take steps to improve the performance of motors used in their room air conditioners, or to provide self-contained capacitors for power factor improvement, few present models will meet the foregoing requirements. Therefore, enforcement of this service rule will be postponed with respect to air conditioning equipment until suitable designs become generally available, but not beyond January 1, 1955.

According to Union Electric, there are certain definite benefits which will accrue to the industry as a result of manufacturers taking steps to provide equipment that will conform to the foregoing electric service require-

ment; namely, the following four benefits to the customer:

1) Improved voltage at the outlet, resulting in better and more efficient operation of the room air conditioner and better television reception.

2) Possible avoidance of additional wiring costs. This would be due to the fact that manually controlled room air conditioners with starting currents of 46 amperes or less and running currents of 12 amperes or less could be connected to existing 15 ampere, 120 volt branch circuits; and manually controlled units with starting currents of 46 amperes or less and running current of 16 amperes or less could be connected to 20 ampere, 120 volt branch circuits and still be in compliance with the provisions of the National Electrical Code.

3) Ability to carry some load in addition to room air conditioners on such 120 volt circuits.

4) Reduced electrical loss in wiring.

Also, there are the following six benefits to the manufacturer, distributor and dealer:

1) Increase in number of sales that can be made as a result of fewer wiring changes being required.

2) Increase in customer satisfaction with the product, enhancing the manufacturer's reputation and prestige and bringing repeat and customer referred business.

3) Decrease in service calls and reduction in calls which are not the fault of the equipment itself.

4) Reduced possibility of claims and damage suits.

5) Increase in profits as a result of more sales, fewer complaints, less returned merchandise.

6) Higher sales ticket prices. Power factor correction embodied in the unit will be sold at a profit instead of forcing others to furnish it or the customer to provide special circuits and other wiring changes.

### Urges Prompt Action

Union Electric offers these recommendations "in the interest of expanded market opportunities for air conditioning manufacturers, distributors and dealers, and customer satisfaction with the performance of room air conditioners."

Pending the accomplishment of this objective, a much higher percentage of sales will require the installation of special branch circuits by the customer. It is well to inquire at the time of a sale about the customer's wiring and encourage him to correct inadequacies prior to installation, the memorandum advises.

Union Electric plans to render every possible assistance in meeting this problem. The company will:

a) Urge manufacturers to improve the performance characteristics of their products and to provide adequate information on the nameplate so as to facilitate proper installation.

b) Assist distributors and their dealers with the problems involving adequate wiring circuits.

c) Furnish information to customers and others so as to encourage full understanding of the problem and cooperation in solving it.



**1** BECAUSE IT USES all possible means (including two large front show windows) to enable passersby and customers to see samples of its sheet metal skill, such as . . .



**3** THE SPACIOUS office front (with glass blocks over the windows set off by stainless strip) in which can be seen samples of modernized furniture . . .



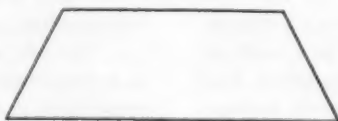
**4** INCLUDING A FILING CABINET manufactured in 1890 and remodeled with aluminum-stainless steel covering . . .

## Sheet Metal Shop

"YOUR BEST advertisement is a sample of the work you can do," said Richard E. Walsh, owner of the Thomas Finn Co., St. Paul, Minn., when he explained the workmanship that makes his own office just such a sample. He feels that the progressive sheet metal contractor is capa-

ble of attracting many new customers by dressing up his place of business.

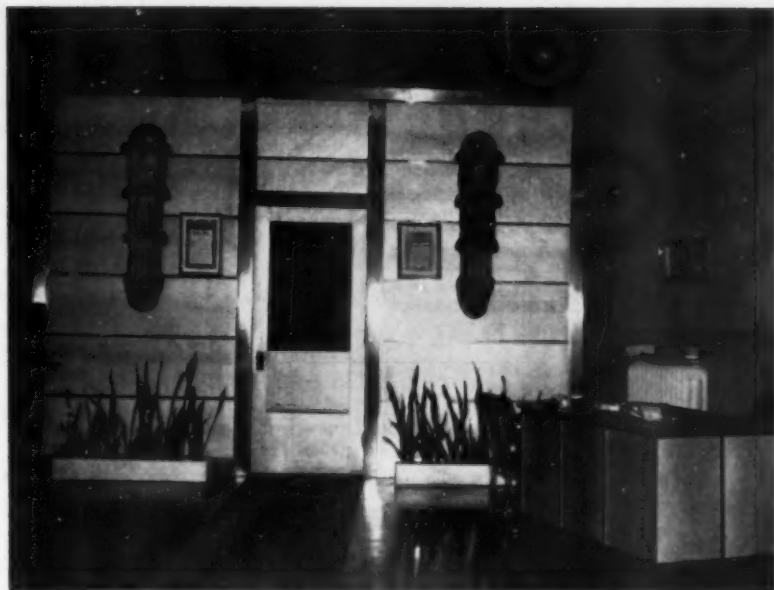
The office, shaped like this,



has two large front show windows that make it possible for passersby to notice the businesslike appearance of the office.

As you walk in the front door, you immediately notice the rear office wall which is paneled with 0.019 embossed aluminum. The panels are





**2** THE REAR OFFICE WALL (*left*) paneled with embossed aluminum, trimmed with stainless steel strips and dressed up with sheet copper ornaments (*in detail, right*) . . .



**5** A DESK (VINTAGE 1920) which has been covered with embossed aluminum and stainless steel trim and set on modernistic supports . . .



**6** AND A REFURBISHED type-writer desk

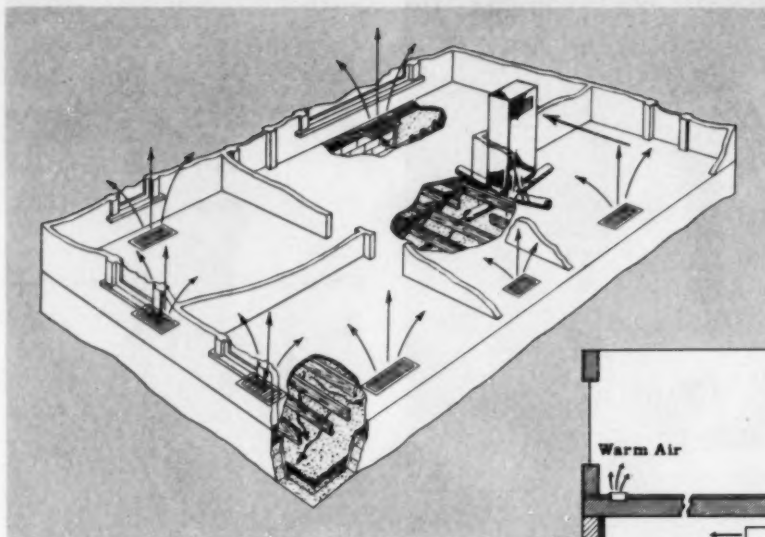
## Its Own Best Ad

backed with 1 in. fiber glass insulating board that not only adds rigidity to the wall but aids materially in reducing machinery noise from the shop. Each panel is trimmed with stainless steel strips, as are the door frame and borders. This bright metal both highlights and harmon-

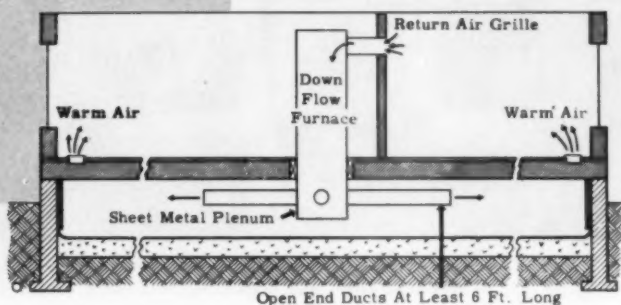
izes with the large area of aluminum sheet. The decorative scheme is continued by using aluminum trimmed flower boxes at the floor level and an ornament made of sheet copper (Fig. 2, right) in the form of acanthus leaves topped with a pomegranate.

In the front of the office, the aluminum-stainless steel motif also predominates. Glass blocks over the plate glass windows are effectively set off by the stainless steel window trim. The front door is covered with embossed aluminum.

(Please turn to page 125)



IN CRAWL SPACE plenum systems, a downflow furnace discharges air to a subfloor plenum (see elevation view, below). To meet codes, stub ducts should be at least 6 ft long, considerably below floor joists, pitched downward



## Solving Crawl Space Heating Problems

Advantages of crawl space plenum systems are described, and solutions to some problems — possible dust fall through registers, compliance with fire codes — are discussed

By S. Konzo and H. T. Gilkey  
University of Illinois

ONE OF the most interesting developments of recent years in connection with warm air heating is a system which is referred to as the crawl space plenum system. This arrangement was used in some localities before the war, while in other localities it is not permitted by local restrictive codes. The purpose of this and the next article is to explain how the system is intended to operate, the degree of success in producing com-

fort in the home, and some of the problems that have been encountered.

The essential features of the crawl space plenum system are shown above. The furnace, which is of the downflow type, is most conveniently located in the middle of the house. The warm air is discharged from the furnace to a subfloor plenum of sheet metal, with the bottom of the plenum provided with a cap. At the sides of the plenum are connected a number of stub ducts which are relatively short and which merely discharge the heated air into the crawl space. In

practice, the stub ducts are usually pitched slightly downwards so that the heated air is not directed against the floor joists. The ducts are usually 6, 7, or 8 in. in diameter and vary in number from about four to eight, depending upon the size of the house.

The heated air discharged into the crawl space leaves the stub ducts with a velocity of from 400 to 600 fpm, depending upon the number and size of ducts used. The jet of air entering the crawl space is dissipated within a few feet of the end of the duct, so that the throw of air does

Diagram of the system and the elevation view are reproduced from Manual 4, Warm Air Perimeter Heating as Applied to Structures without Basements, third edition (1953), published by the National Warm Air Heating and Air Conditioning Association.

not extend more than about 10 ft from the end of the duct. A common arrangement is to direct the stub ducts towards the exposed corners of the crawl space. Since the discharge air is warm, the air tends to rise towards the joists of the first story floor. The air seeks to escape through any openings that are present, and the most convenient ones are the registers that are provided below windows and along the exposed wall. The air is then returned through the rooms to the return air intakes located near the furnace.

### Comfort Heating Results

The principle of heating involved can be termed a panel-convection principle, since panel heating is provided by the warm floors heated by the air in contact with the floor joists, and convection heating is accomplished by the air discharged into the room through the registers.

As indicated in previous articles, whenever panel heating effects were provided by means of warm floor surfaces, the research results had indicated that:

- The temperature difference from floor to ceiling was smaller than for installations in which the floors were not warmed.
- The temperature distribution in different parts of the room was more uniform than for installations in which the floors were not warmed.

From the standpoint of room air temperature alone, therefore, the crawl space plenum arrangement offered a great deal of promise.

A number of unusual problems arose in connection with this arrangement, and these can be itemized as follows:

- Dust and dirt can fall through floor registers and accumulate in the crawl space.
- The system may not conform with the provisions of the National Fire Protection Association.
- The temperatures maintained in the crawl space may cause shrinkage of the wood floors above.
- The moisture given off from the

damp ground surface in the crawl space may result in excessive humidity in the occupied space.

- The heat loss through the foundation wall of the crawl space may be large and give rise to high fuel bills.

A detailed discussion will be presented in this article of the first two problems, and means will be described whereby they can be reduced in magnitude.

### Dust Fall through Registers

The objection has been raised that any dust and dirt on the floor can be swept into the floor registers and accumulate in the crawl space below the registers. There is no question that if the housekeeper is so inclined, the floor registers do offer a temptation to sweep the dust into the openings. This problem is not unique to a crawl space plenum heating system, since any floor register offers the same temptation. Many in the industry are inclined to rule out floor registers and to use baseboard registers instead.

It is true that in the case of floor registers used with a connected duct arrangement any dust that is swept into the registers will collect in the register box and can be readily removed by a vacuum cleaner hose. Removable floor registers facilitate such cleaning operations.

Assuming that the ordinary register box has proven to be satisfactory in a conventional duct arrangement, no reason exists why a similar register box cannot be used for a floor register in a crawl space plenum system. With this arrangement, the occupant cannot see the crawl space floor, and any dust accumulation in the box can be readily removed by a vacuum cleaner hose after the register face is lifted.

### Fire Protection Codes

In some localities the local building authorities will not permit the installation of a crawl space plenum

(Please turn to page 126)

## How We Got Where We Are In

## WARM AIR PERIMETER HEATING

the 16th in a series  
planned to tell about:

► Investigations in the Research Residences at the University of Illinois

► Design and installation data (condensed from manuals published by the National Warm Air Heating and Air Conditioning Association)

► Specific phases of warm air heating

... in articles so far:

► heating basementless homes

► warm air ceiling panels

► heating slab floor homes with ceiling and floor panel systems

► floor panel-convection heating for slab floor homes — partially open and completely open

► survey of field practices

► new research residence built

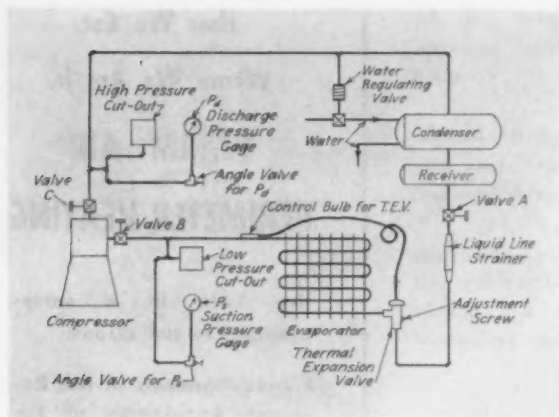
► comparison of two loop perimeter and three convection systems

► comparison of perimeter loop and two loop system

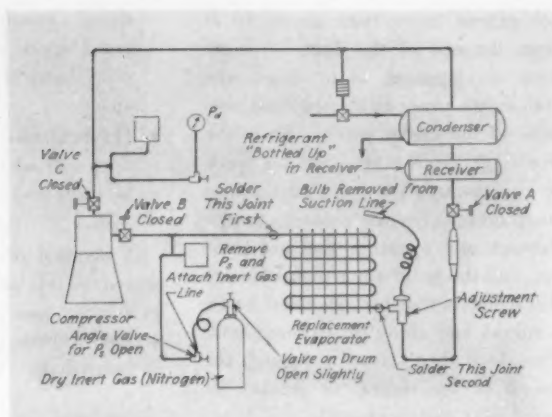
► loop vs. radial system

► perimeter laboratory studies (three articles)

► crawl space heating



**1** ANY COMPONENT of a refrigeration system may fail for some reason, but some parts have a greater failure potential than others. For the system shown, the valves aid in "pumping down" and the gages (with attaching valves) facilitate testing and provide access for charging the system



**2** WHEN INSTALLING a new evaporator, the service man should 1) allow inert gas to bleed through lines while soldering, to prevent internal scale; 2) solder joints in the order shown; and 3) remove the nitrogen drum and open valve A so that the refrigerant can blow inert gas out the valve attached to P<sub>2</sub>.

# How to Replace Cooling System Parts

By S. W. Reid  
Air Conditioning Engineer  
Gilbert Associates, Inc.

Why do certain components fail, and what can be done about them? Described here in detail is a replacement procedure — with all the necessary precautions

BECAUSE AUTOMATIC home equipment has become such an important part of their daily lives, owners of this equipment become quite "put out" when it fails to function properly. They demand prompt and efficient service. The value of being prepared to meet this demand has been recognized by alert heating, air conditioning and sheet metal dealers who know that sales and service go hand in hand in building a reputation.

The residential air conditioner is perhaps the most recently promoted item of major equipment for the home. It is not a new item, however, for packaged units of a suit-

able type have been on the market for at least 20 years. One reason for their slow acceptance was the costly maintenance and service required of the early units. The "sealed system" that we have today had not been developed for use in units of the residential size.

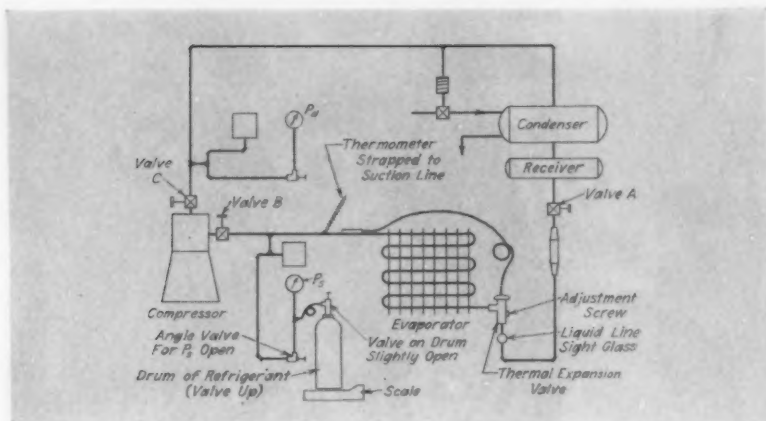
Today's air conditioners are much improved from the standpoint of reliability. Manufacturers have had enough experience with their post-war equipment to offer warranties covering a number of years. Home builders are realizing that the air conditioning industry can now provide, at a reasonable cost, a reliable product that can help sell homes.

Owners, accustomed to air conditioning in offices, restaurants, and theaters, are looking for the same comfort in their homes. Demand for residential air conditioning is accelerating at a rapid pace.

## Can't "Sell and Forget"

Amid all the excitement, however, certain facts must be faced. Residential air conditioning cannot be sold over the counter and forgotten. Each and every installation requires engineering in some degree. So also will each and every job require attention from time to time whether for adjustment, maintenance, or repair.





**3** WHEN THE SYSTEM is low in refrigerant charge, the service man should proceed as follows: 1) Set adjustable thermal expansion valve for center of range; 2) attach refrigerant drum as shown; 3) operate compressor and admit several ounces of refrigerant at a time by means of valve at  $P_2$ ; 4) after each addition, check suction temperature against temperature corresponding to suction pressure; and 5) check the sight glass for "solid" liquid

The day when a man with a few simple hand tools could perform all of the repair work about his home has long passed. The complexity of many appliances requires that special and costly equipment be used just to locate trouble. Furthermore, even though the nature and causes of trouble are discovered, the parts may be assembled semi-permanently in sub-assemblies that must be returned to the manufacturer for repair.

The dealer who has men trained to meet these needs efficiently will command an enviable reputation in his locality. The dealer who tries to build a business on his sales ability alone without regard to a strong service department will not be able to maintain as important a position in residential air conditioning as he otherwise could.

Manufacturers recognize the importance of good service by supplying their field organizations with detailed instructions on each dealer item. In addition, the larger manufacturers run regularly scheduled service schools to discuss and emphasize service techniques directly with dealer service personnel.

While each different make and model of air conditioner will require specialized knowledge of its

construction and intended method of operation for proper servicing, there are certain fundamental techniques which apply to all refrigeration systems. We shall try to develop these in this article and the next.

### Why Components May Fail

Let us start by reviewing the basic refrigeration system as shown on Fig. 1. It will be recalled that warm air is cooled by bringing it into heat exchange relationship with liquid refrigerant. As the process proceeds, heat flows out of the air and into the liquid. Heat leaving the air lowers the temperature and moisture content of the air. Heat entering the refrigerant causes it to change from a liquid to a vapor. The heat exchange process takes place in a device called an evaporator, which is often a coil of copper tubing passing through a series of aluminum fins. The coil itself rarely requires service. Occasionally failures occur due to leaks in return bend soldered joints. Once in a while a coil will be found which does not perform properly because it has not been protected from dirt and lint by a filter.

After it leaves the evaporator, the  
(Please turn to page 102)

## AIR CONDITIONING FUNDAMENTALS

the 19th in a series covering systems and all components

... in articles to come

► more on replacement procedures for defective parts in cooling systems

... in articles so far

► terms used in the field

► parts of the refrigeration system and how they work

► how to estimate cooling loads

► getting proper air stream patterns in the conditioned space

► duct design — sizing for summer vs. winter

► condensing units

► fans, fan motors and fan speeds

► filters

► condensers and water regulating valves

► cooling towers and evaporative condensers

► equipment selection

► electrical controls and control systems

► sample problems—estimating cooling loads and selecting equipment

► detecting poor performance of cooling equipment

► replacing cooling system parts



A. J. SABATHNE (*right*), president of the Sheet Metal Contractors National Association, is welcomed by Wm. C. Gehrke (*left*) and Frank Kramer



CONTRACTORS VISITED display booths in the exhibition hall between technical sessions. Here, M. Perlman (*left*) explains a humidifier to Keith Anderson and Gordon Caflisch. Jim Miner (*right*) assists in the explanation

## Tips on Installing, Servicing, Business Methods

. . . were given at the Wisconsin contractors' annual meeting. Conversion burners, centrifugal fans, and outdoor air requirements were covered — along with new codes, bid shopping

"EXPERIENCES OF the past should be used as guideposts for the future." With this as a theme, the Sheet Metal Contractors' Association of Wisconsin opened its 39th annual convention in Milwaukee. Nationally known authorities on various phases of the industry were there to help make this convention the largest and most successful one in the association's history. The final business session saw the following officers elected: Ed Schield, president; Bob Heinritz, first vice president; Vincent Kerscher, second vice president; Roland Bier-sach, secretary; Frank Kramer, treasurer; Louis Stefanik, sergeant at arms; and Cy. Perkins and A. T. Ihde, directors for three years.

Contractors and dealers were told by George Zimbelman, Armstrong Furnace Co., that the servicing of heat-

ing and cooling equipment should receive the same professional prestige as that accorded other skills, because the diagnosing and correcting of difficult operating problems requires persons with better than average abilities. The heating and cooling service man must understand the combustion of fuel, the refrigeration cycle, distribution of air, sheet metal fabrication and a host of other essential skills and data.

In discussing the servicing of heating equipment, Mr. Zimbelman pointed out the necessity of providing adequate outside air for combustion purposes (see the article, Why Modern Furnace Installations Must Have Fresh Air Intakes, *American Artisan*, May 1953). He said that each 100,000 Btu per hr input would require about 1500 cu ft of air if good combustion efficiency is to be ex-



LADIES PROGRAM COMMITTEE included (standing, l. to r.) Mrs. Irv F. Kanitz, Mrs. Walter Marth, Mrs. Cy. Perkins, Mrs. Bernard Zahn and Mrs. Roland Biersach; (seated, l. to r.) Mrs. Louis Stefanik and Mrs. Frank Kramer



NEW PRESIDENT Edwin H. Schield (left) receives the gavel from retiring president Bernard Zahn

pected. He also advised that a flue gas analysis be made on both gas and oil fired equipment.

When discussing the installation of conversion burners in existing warm air heating systems, Mr. Zimbelman said that more care is needed to obtain the best adjustment of the fuel burner in such installations than is required for a new factory engineered job. Conversion burner installations can be improved, he said, by using baffles which cause combustion gases to remain in the furnace long enough for maximum heat to be extracted. One type of baffle recommended calls for the placement of a non-magnetic stainless steel round duct into the breeching collar and extending it across the combustion chamber to the wall opposite the entrance to the smoke pipe. This baffle is split and opened on the top side so that combustion gases must wipe the entire wall area of the heat exchanger before reaching the smoke pipe.

Another suggestion for reducing the smoke condition sometimes found with oil fired conversion jobs is to reduce the nozzle size by 25 per cent. This creates a higher pressure and aids in the atomization of the oil.

When the problem of an obstinate pulsation condition on oil fired conversion jobs exists, making a small opening into that part of the combustion chamber beneath the burner tube provides a slight amount of secondary air which does away with the complaint, he said. However, this remedy sometimes causes a decrease in CO<sub>2</sub> reading and to correct the situation to a point where the original CO<sub>2</sub> can be obtained, it is necessary to adjust the air regulating valve for less air.

#### Plan Seminars on Business Practices

A. J. Sabathne, president, Sheet Metal Contractors' National Association, outlined some of the events that will take place at the association's annual convention



CONVENTION COMMITTEE and aids (l. to r.) Roland Biersach, G. F. Wolff, Jr., Cy. Perkins and Richard Zillmer talk over program details



BOARD OF DIRECTORS and some of the new officers include (sitting, l. to r.) Bernard Zahn, Edwin H. Schield, Cy. Perkins, Louis Stefanik; (standing, l. to r.) Roland Biersach, Henry Potthast, R. S. Schmieder and Frank Kramer

in Pittsburgh on May 10 to 12. Scheduled for discussion are plans for two day seminars to be held in Wisconsin, Illinois, Indiana and Michigan this fall. Each seminar would have identical programs and would include up-to-date information on subjects of interest to contractors. These subjects would include book-keeping procedures, cost accounting and estimating, allocation of costs to job and to overhead, insurance, liens, proposals and contracts, taxes, and — most important — how a contractor can be assured of a salary equal to his worth to his company besides a good return on his capital investment.

Mr. Sabathne urged the suppliers to encourage contractors not attending this convention to plan to attend these seminars in their states.

### **Discusses Bid Shopping, Jurisdictional Awards**

Another representative from the Sheet Metal Contractors' National Association was its executive secretary, Joseph D. Wilder.

Mr. Wilder pointed out that contractors engaged in interstate projects come under the Taft-Hartley law and a few hours' study of this law might help prevent any misunderstanding of the rights and privileges of both labor and management when the contractor is working on out-of-town jobs.

Another suggestion made by Mr. Wilder was that support be given to the federal bid shopping law now being processed by both houses of Congress. He suggested that state bid shopping laws be given consideration at this time because there are now two states that have such laws and they are proving very helpful to contractors.

During the last week in February, Mr. Wilder said, an agreement was made by the National Joint Board for Settlement of Jurisdictional Disputes that the installation of all packaged air conditioning equipment should be done by journeymen sheet metal workers. However, Mr. Wilder stated, this was an agreement and not an award of this type of work on a national level. However, he feels that where the claim for this work is made by any other trade group on a local basis, the sheet metal workers will be certain to be awarded any jobs that involve the installation of equipment where ductwork is connected. He feels the sheet metal contractor should bid on this type of equipment in every case because if there is an award on a local level to some other trade, the sheet metal contractor can make it.

### **Revised Code Beneficial**

The revision of the Wisconsin heating and ventilating code was explained by Roger Ostrem, who said that to obtain a permit to do heating or ventilating work on any building other than a private or duplex house, the dealer must submit a complete plan along with the proposed specification for the equipment. This applies to existing as well as new buildings. It also applies to public

buildings where the use is to be altered, such as converting a grocery store into a restaurant.

Such a code is valuable to the contractor bidding on the proposed work because it lets him know that other contractors submitting bids on the same job must offer a price that will include the same equipment, as specified in the approved plan, Mr. Ostrem said.

In listing some of the changes that will appear in the revised code, he stated that where 10 cfm had formerly been required for certain ventilation jobs, this figure had been reduced to  $7\frac{1}{2}$  cfm in the new code; also where 30 cfm had been previously required for certain locations, the new code requires six air changes per hr.

Continuing the explanation of the new code, Mr. Ostrem stated that the occupancy of schoolrooms had been determined in the past by dividing the area of the room by 18. This requirement has now been changed to 24 sq ft per person. Also, in church basements a window and door opening area of 10 per cent of the floor area had been required (or a mechanical ventilating system installed) if the basement was to be used for an assembly room. This figure of 10 per cent has been reduced to 3 per cent.

### **Explains Centrifugal Fan Applications**

The applications and operation of centrifugal fans were outlined by W. E. Tracy, Westinghouse Corp. With the aid of charts and graphs, he showed how the selection of a centrifugal fan and its balancing characteristics were related to the economical operation of a ventilation system.

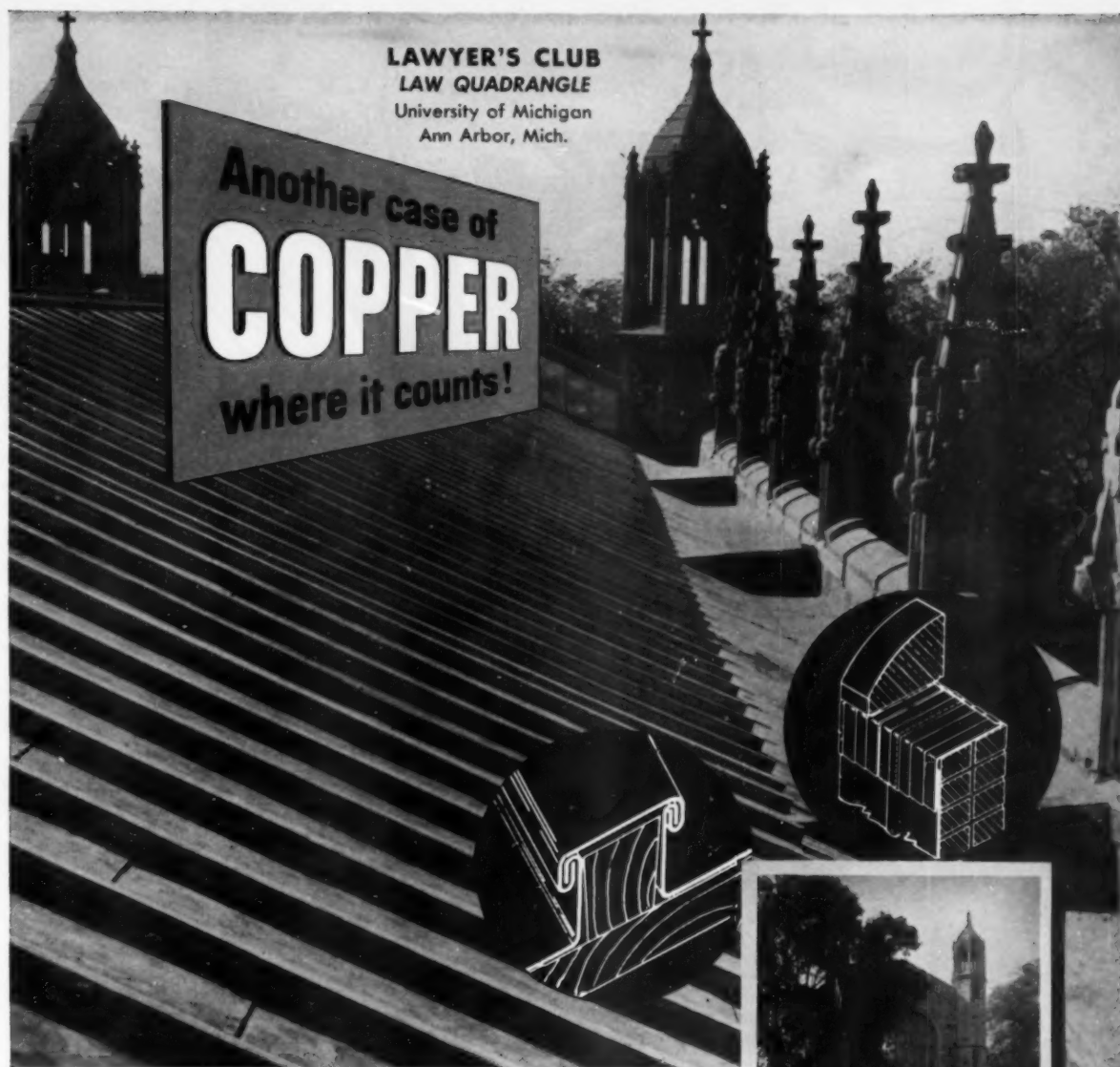
Discussing as an example a specific ventilation system designed for a certain static pressure and volume capacity and requiring a motor of a certain rating, Mr. Tracy recounted that when the duct system was installed, static pressure was not as high as had been specified. The result was a greater volume of air being delivered, this additional delivery causing an overload on the motor. The solution was to reduce air flow (reducing the rpm of the blower) rather than to create the resistance necessary to develop the design static pressure. With this change in volume and static pressure, an even smaller motor could be used than had been originally specified.

Mr. Tracy concluded by emphasizing the importance of the capacity tables of the fan manufacturers and the application of the three fan laws, which are:

- 1) Air delivery or volume in cfm varies directly as the ratio of speeds in rpm.
- 2) Resistance to flow of air (static pressure) varies as the square of the ratio of changes in rpm of the fan.
- 3) Hp required to operate a fan varies as the cube of the ratio of changes in speed, rpm.

Throughout the three day convention, an exhibition of the sheet metal, warm air heating and residential air conditioning equipment of 20 companies was open (when business sessions were not in progress).





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On the roof of the Lawyer's Club 4,000 lbs. of 32-oz. Revere Copper was used to line the gutters, 10,000 lbs. of 16-oz. Revere Lead-Coated Copper for the batten seam roof and 500 sq. ft. of Revere-Keystone\* Lead-Coated, 16-oz. 3-Way, Thru-Wall Flashing under the coping stone.

To make sure of a long-lasting and trouble-free installation, the architect and contractor worked closely with Revere's Technical Advisory Service on roofing and flashing techniques. If you have technical problems, your Revere Distributor will put you in touch with Revere's Technical Advisory Service.

\*Patented



IN CIRCLE above left is cut-away section of batten seam roof of Revere Copper installed on the Lawyer's Club. Circle at right shows detail of Revere-Keystone 3-Way Thru-Wall Flashing of copper that will seal out weather, prevent recurrence of costly leaks.

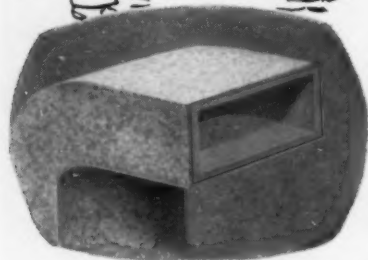
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## Just for the want of a little **ULTRALITE Duct Liner . . .**

. . . customers lost their patience, the store manager nearly lost his mind—and the people who installed the air conditioning system nearly lost the good will of the store.

Here's what happened: The store's "specs" did not call for duct liner. The sheet metal contractor called this oversight to the store's attention and recommended Ultralite glass fiber Duct Liner. But the store felt that the additional cost, while small, was not necessary.

Came the Grand Opening of the modernized store—with the results pictured above. Of course, the contractor received an urgent call-back. He quickly solved the noise problem with Ultralite Duct Liner. A happy ending—except that it cost the store several times as much as if they had originally lined the ducts with Ultralite!

Moral: Urge every customer not to be pennywise and pound foolish about duct liner. See that Ultralite

Duct Liner is in all your air conditioning specs. From a cost standpoint, Ultralite is just a small portion of the total cost—but it can make all the difference between an enthusiastic customer and a disgruntled one. That's why many contractors put Ultralite Duct Liner in every job—even those where duct liner is not specified.

Ultralite is the only insulation made of long-strong glass fibers. Easy to install, pleasant to handle. Ultralite Duct Insulation (for thermal protection) and Ultralite Duct Liner are stocked locally in 72 cities. Your nearby distributor is listed in the Yellow Pages under "Gustin-Bacon" or "Ultralite."

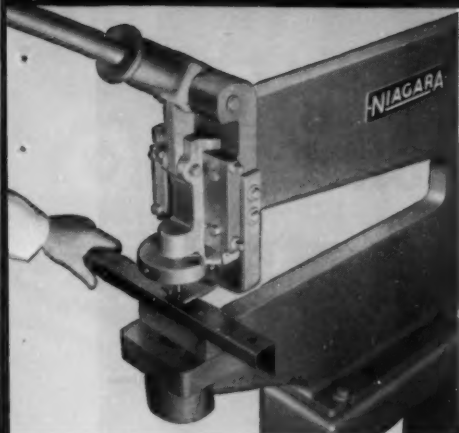


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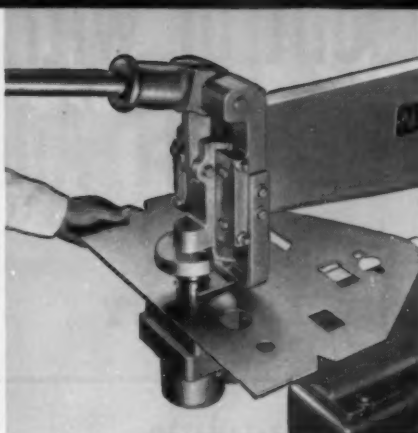
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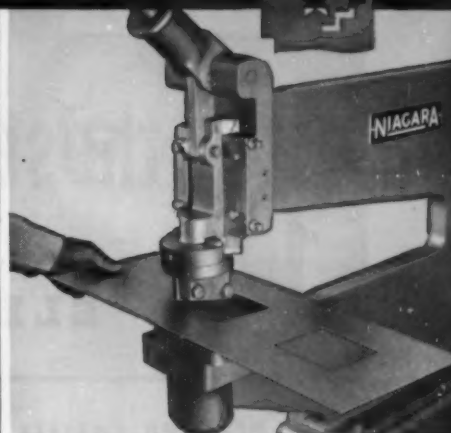
Look at a few of the many jobs  
this one machine can do for you



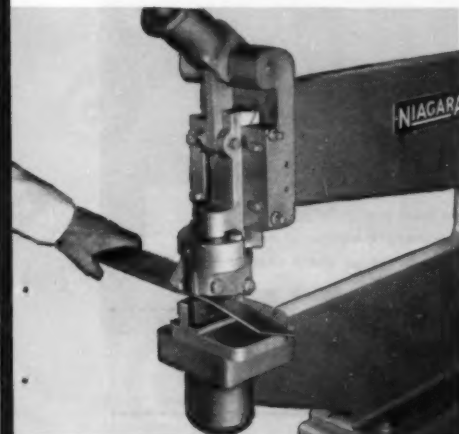
Punching Channel



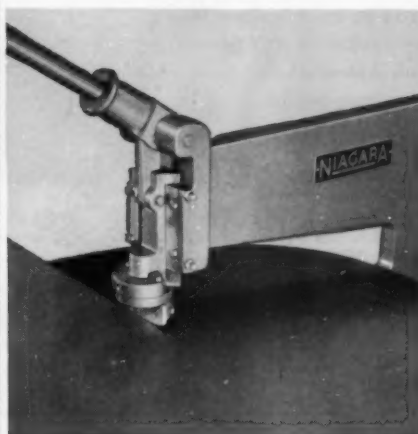
Punching Sheet



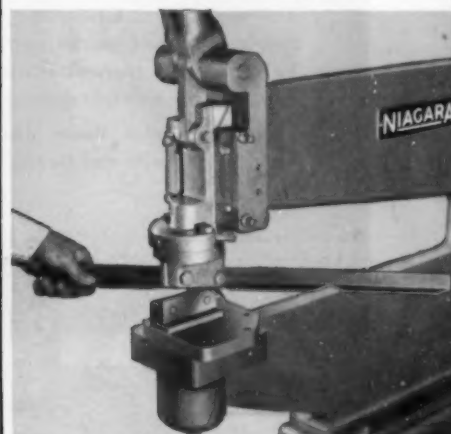
Cutting Inside Shapes



Shearing 3/16" Plate



Center Slitting 48" Wide Sheet



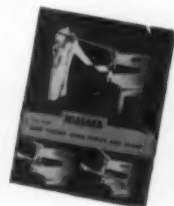
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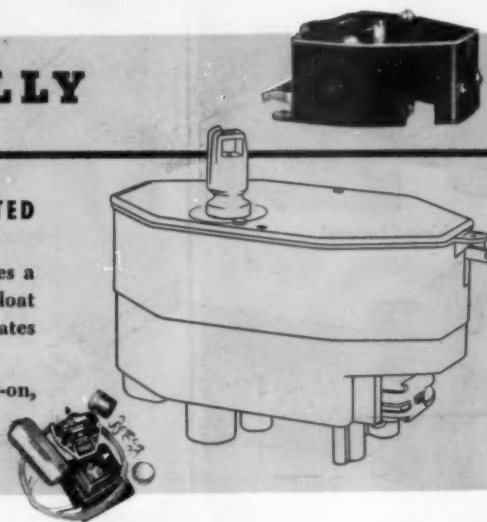
## 1.

### ELECTRICALLY

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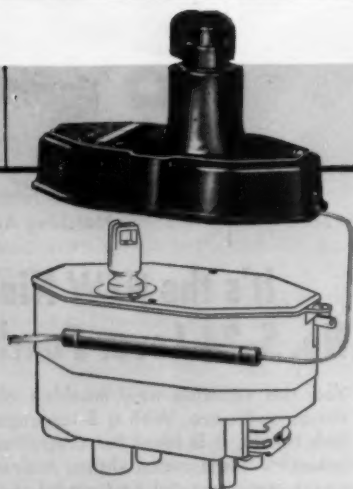
The new Detroit CRC-239-PE Add-on Package provides a simple means of converting any manual CRC-239 Float Valve to room thermostat control. Automatically regulates flow of oil to maintain desired room temperature.

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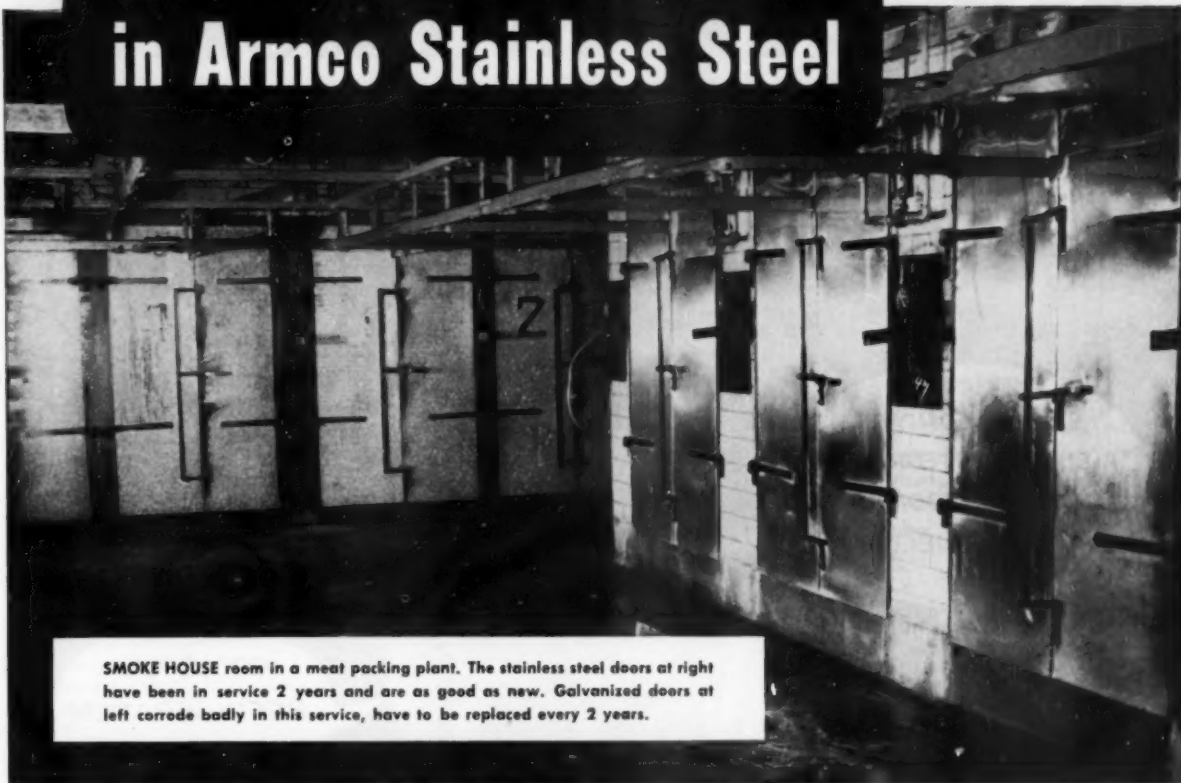
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# Here's business for you in Armco Stainless Steel



**SMOKE HOUSE** room in a meat packing plant. The stainless steel doors at right have been in service 2 years and are as good as new. Galvanized doors at left corrode badly in this service, have to be replaced every 2 years.

Most meat-packing and processing plants are going to stainless steel as fast as they can. The reasons are sanitation, reduced cleaning costs and long life. Are you taking advantage of this opportunity for new business?

Here are just a few stainless applications in meat packing plants that can often be fabricated in sheet metal shops:

## Work tables

Trimming tables

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Viscera separating tables

Landing tables

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Wash stands

Scalding tubs

Sterilizing lavatories

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Tripe washers

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Lard settling tanks

Sausage cookers

Bacon curing boxes

Spice bins

Ice bins

Baking ovens

Trays

Casing holding tanks

Smoke houses

Why not get acquainted with this type of work and sell the packing houses in your area on new applications for stainless steel?

## Call your Armco distributor

When bidding on a job, phone your Armco Stainless Steel Distributor first regarding your requirements. He will probably have the right material in stock ready for immediate delivery. This will make possible your giving the prospect a favorable delivery promise and help you land the order.

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with Winter-Summer Conditionair



SIMPLE, COMPACT...  
A SINGLE INTEGRATED  
UNIT FOR TODAY'S  
BUILDING NEEDS

HEATS BY  
FORCED WARM AIR  
IN WINTER!

COOLS BY  
REFRIGERATION  
IN SUMMER!

**Reap the cash rewards in  
year 'round air conditioning**

Now General Motors opens up great new profit opportunities for dealers with a combination heating-cooling unit that answers builders' needs for low-cost, packaged, year 'round air conditioning.

The Delco Winter-Summer Conditionair is a compact central unit for forced warm air heating with oil or gas, and for cooling by refrigeration. Even, low-cost comfort assured by Circle-Air heat transfer system and centrifugal blower. Includes filtering, ventilation, complete humidity control. It offers home builders greater freedom in home planning because it permits elimination of many design compromises that add to the cost of a house. Items like breezeways, porches, screens, movable sashes can be forgotten when Delco Winter-Summer Conditionairs are installed!

**Write or wire:** Delco Appliance Division, Dept. AA, General Motors Corp., Rochester 1, N. Y. In Canada, Delco-Heat, Toronto 13, Ontario.



## DELCO CONDITIONAIR

**For a good deal . . . deal with DELCO**

. . . a complete line of automatic oil and gas fired conversion burners, Conditionair forced warm air furnaces and heating and cooling units, boilers, water heaters and electric water systems.





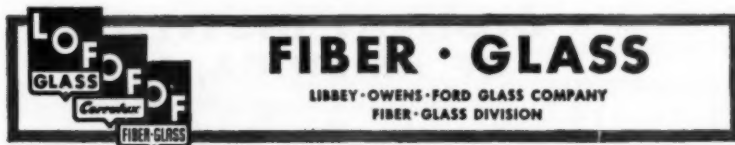
Vinyl-faced Super-Fine minimizes possibility of condensation on fresh-air intake ducts. L·O·F Super-Fine's ease of application reduced installation costs for Johnson John-R Insulation Co. of Detroit.

## Give your insulating jobs these advantages with L·O·F Super-Fine

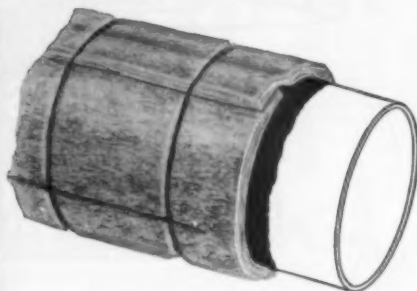
*Reduced installation time!* — L·O·F Super-Fine insulating blankets are lightweight, pliable, easily cut, handled and installed. No special cutting tools! No time-consuming shaping or fitting! Super-Fine conforms to irregular contours or projections. The result:—easier, faster installation.

*Increased over-all efficiency.*—Super-Fine is superior insulation in its resistance to heat flow. Saves fuel on heating ducts, power on cooling ducts. Increases over-all efficiency of both systems. These fine glass fibers will not burn, absorb moisture, mildew or rot. Available with various types of vapor barriers for temperatures to 450° F., and with special binder for temperatures to 600° F.

*Quality product backed by Libbey-Owens-Ford!*—Super-Fine is backed by Libbey-Owens-Ford—long famous for outstanding glass products—your guarantee of top-quality insulation.

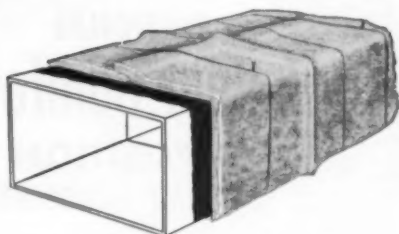


### How to install Super-Fine on cooling and heating ducts



#### CIRCULAR DUCTS

Super-Fine conforms easily to curved surfaces. After adhesive is applied, Super-Fine is simply wrapped and secured with tying cord, light wire or staples. If staple method is followed, use in combination with adhesive. Allow sufficient overlap on larger ducts to stagger staples.



#### RECTANGULAR DUCTS

Super-Fine is wrapped around surface with 3" overlap. Ends can be butted or lapped. Secure with light-gauge tie-wire or Fiber-Glass tying cord or use staple method—allowing sufficient overlap on large ducts to stagger the staples. Super-Fine is also used as duct liner in air-conditioning ducts to reduce sound in middle- to high-frequency ranges.



**FREE!** Helpful folder gives detailed instructions for installation of Super-Fine on metal ducts. Write Libbey-Owens-Ford, Fiber-Glass Division, 4544 Wayne Building, Toledo 3, Ohio:



**NATIONAL  
Indoor Comfort  
EXPOSITION  
HEATING—COOLING**

**32ND  
ANNUAL  
OHI  
CONVENTION**

**For last-minute exhibitors!**

There are only a few booths left, but if you want to talk to 10,000 or more dealers and fuel oil jobbers face to face, better order your space now before it's too late. Why not phone in your reservation today?

**YES, everybody in the automatic oil heating industry**

—dealers, distributors, wholesalers, fuel oil jobbers—will fill all traffic lanes getting to their only national Show to see what's new in heating and year 'round air conditioning, and the money-saving equipment for oil delivery and terminal operation. We'll be looking for you. Your friends in the trade and your suppliers will welcome you!

**It's your show & your convention!**

No registration fee for either affair. OHI sponsors both for the entire industry. Both affairs are under one roof—the Commercial Museum, Philadelphia, on May 16 through 20. So come! See and learn what's new for you.

**Convention is by dealers for dealers**

The program chairman for the "general sessions" is a well-known dealer who'll be assisted by other successful dealers, fuel oil jobbers and service managers. They'll give you ideas a-plenty in new methods, new systems and new practices you can take home and use—profitably! These sessions run on Monday, Tuesday, Wednesday and Thursday from 9:30 AM 'til noon. The exposition opens each day at 1 PM.

**Made your hotel reservations?**

Hurry! Hurry! Hurry! Advance registrations are extremely heavy. *Don't forget the wife . . .* bring her too! There'll be special plans for the ladies who register at the OHI Ladies' Entertainment Room in the Benjamin Franklin Hotel. For room reservations at any hotel, write Sales Department, Benjamin Franklin Hotel. Tell them that you're coming, when you'll come, when you'll leave and what accommodations you want.

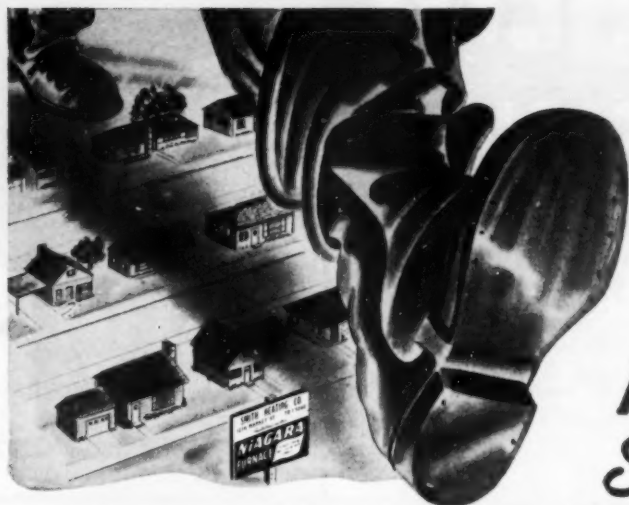
**Come and see what's NEW**

**No registration fee for anyone**

**OIL-HEAT INSTITUTE  
OF AMERICA, Inc.**

500 Fifth Ave., New York 36, N.Y.  
Phone LOngacre 4-3755





# Again!

## NIAGARA ADVERTISING *Steps Forward!*

**Creates Sales Opportunities for NIAGARA Dealers**



In 1954 NIAGARA national advertising will appear in the several million copies of publications illustrated here, delivering news of the advantages of Niagara furnaces to all these live prospects everywhere . . . home builders . . . home buyers . . . home modernizers. The NIAGARA name will be impressed upon even more of your furnace prospects than ever before.



**DELUXE  
SERIES 50**

**OIL-GAS  
CONVERTIBLE**



### THE **NIAGARA** LINE includes:

- Furnaces for homes of any style and size, ANYWHERE.
- Furnaces for all fuels: gas, oil, coal.
- Furnaces with cast iron and steel heat exchangers (including Deluxe gas-fired cast-iron models for those who want the very finest — wonderful prestige-builders for those who install them).
- Oil-Gas Convertibles: high-boy up-flow and down-flow; also gravity and forced-air models for basement installations.
- Summer Cooling units, designed to use blower, filter and ducts of forced-air heating system for circulation of refrigerated air.

Have YOU investigated the  
Niagara possibilities in YOUR territory?  
Write for details.

**NIAGARA FURNACE DIVISION**  
**The Forest City Foundries Company**  
2500 West 27th St., Cleveland 13, Ohio

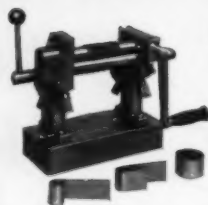
**NIAGARA is the word for MAXIMUM HEAT at MINIMUM COST**



## DI-ACRO VARI-O-SPEED POWERSHEAR

With shearing speeds from 30 to 200 strokes per minute, the DI-ACRO POWERSHEAR cutting cycle can be set for speed of maximum efficiency for each shearing operation. Continuous action eliminates clutch engagement for ease of operation and high speed production. Capacity 16 gauge steel. 2 sizes—shearing widths 12" and 24".

# di-acro PRECISION MACHINES



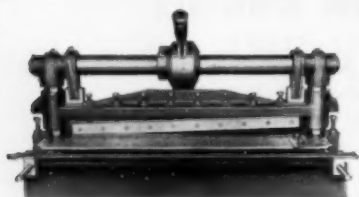
## New DI-ACRO ROLLER

This revolutionary slip roll forms a perfect circle of any diameter in TWO passes through the forming rolls; also forms several bends spaced as desired in a single flat sheet. This is done by positioning the idler roll with a cam actuated lever. 8 models available. 6", 12", 18", 24", 30", 36" and 42" widths, capacities 16 to 24 gauge.



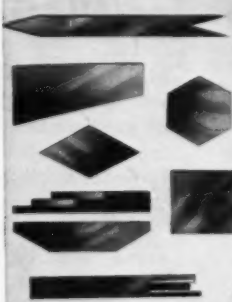
## DI-ACRO HYDRA-POWER BENDER

This revolutionary, standard machine is quickly converted into a "custom-built" unit exactly suited for each bending job. Forms simple and complex bends in tubing and all solid ductile materials. 2 sizes—radius capacity 9" and 24".



## DI-ACRO SHEAR

Rapidly shears or squares ductile and pliable materials to die accuracy. Also cuts slits, strips, notches. Capacity 16 gauge steel. 4 sizes—shearing widths 6", 9", 12", 24". (Examples of parts at right.)



## DI-ACRO BENDER

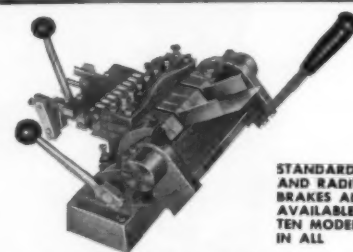
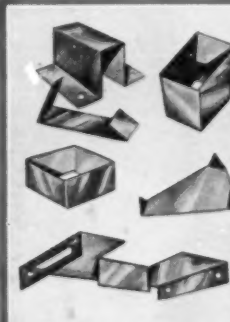
Makes simple and complex bends for "DIE-LESS DUPLICATING" of an unlimited variety of parts in tubing, angle, channel, rod, wire, molding, strip stock, etc. 5 sizes—capacity  $\frac{1}{8}$ ",  $\frac{1}{4}$ ",  $\frac{3}{8}$ ",  $\frac{1}{2}$ ", 1" steel bar. (Examples of parts at left.)

ALSO AVAILABLE  
IN POWER MODELS



## DI-ACRO ROD PARTER

Accurately "parts off" round materials without distortion at production speeds. 2 sizes—capacity up to  $\frac{3}{8}$ " and  $\frac{1}{2}$ " round steel bar.



STANDARD  
AND RADIUS  
BRAKES ALSO  
AVAILABLE  
TEN MODELS  
IN ALL

## DI-ACRO BOX FINGER BRAKE

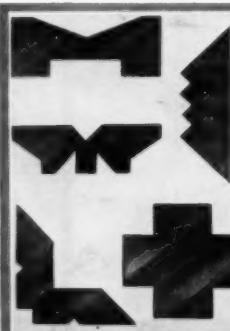
Replaces dies for experimental or production forming of simple and intricate parts. Capacity 16 gauge steel plate, forming widths of 6", 12", 18", 24".



## DI-ACRO PUNCH PRESS

Punches holes of variable shapes up to 4" diameter—also serves as a precision punch press for blanking, forming, drawing. 2 sizes—throat depths  $6\frac{1}{4}$ " and  $12\frac{1}{4}$ ".

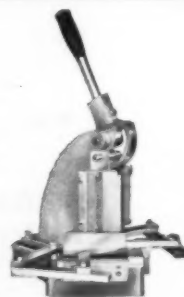
POWER MODELS  
ALSO AVAILABLE



## DI-ACRO NOTCHER

Eliminates need for punch press and dies on many notching operations. Cuts 90° notches up to 6"x6" in 16 gauge steel in one operation.

POWER MODELS  
ALSO AVAILABLE



DI-ACRO  
is pronounced  
"DIE-ACK-RO"

**di-acro**

**O'NEIL-IRWIN MFG. CO.**

394 EIGHTH AVENUE • LAKE CITY, MINNESOTA



Send For 32-Page  
"DIE-LESS" DUPLICATING  
Catalog

ORDER NOW — IN STOCK

# KENNARD WATER SAVERS

*Engineered*

TO SERVE YOUR PARTICULAR NEEDS



Five Sizes  
3, 5, 8, 11 and 16 Tons

## KT—COOLING TOWERS

## EK—EVAPORATIVE CONDENSERS

Kennard selected centrifugal type fans (Hot-Dip Galvanized) for quiet operation and for their ability to overcome duct resistance on indoor installations, and adverse wind effects on outdoor installations.

Completely galvanized cabinets, rugged enough for outdoor use, and completely coated on interior with an asphalt and asbestos fibre material for further rust-proofing.

Wetted Deck of the Cooling Tower is long lived clear heart of redwood.

The Evaporative Condenser has all prime surface copper coil.



Five Sizes  
3, 5, 7½, 10 and 15 Tons

Consult your KENNARD REPRESENTATIVE for nearest supply, catalogs and quantity discounts.

## KENNARD REPRESENTATIVES

Akron, Ohio.....	Slawson Equipment Co.	Louisville, Kentucky.....	Olan J. Hill
Atlanta, Georgia.....	Engineered Products Co.	Memphis, Tennessee.....	R. H. Spangler & Co., Inc.
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Fl. Wayne, Indiana.....	Paller Engineering Co.	San Antonio, Texas.....	R. S. Ryden & Co.
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Houston, Texas.....	Rodgers & Company	Seattle, Washington.....	Mason Emanuels Company
Indianapolis, Indiana.....	Paller Engineering Co.	Shreveport, Louisiana.....	R. F. Zimmerman Co.
Jacksonville, Florida.....	R. J. Clark Equipment Co., Inc.	Spokane, Washington.....	A. B. Hess Company
Kansas City, Missouri.....	O. K. McCullough Company	Stockton, California.....	Refrigerating & Power Specialties Co.
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Little Rock, Arkansas.....	Mullins Engineering Co.	West Roxbury, Massachusetts.....	The Alradyno Co.
Los Angeles, California.....	C & S Equipment Co.	Wichita, Kansas.....	Ray F. Bauer

Write for complete information on Air Conditioning Blower Units—Finned Coils—Sprayed Coil Dehumidifiers—Heating and Ventilating Units — Multi-Zone Units — Liquid Chillers — and larger Evaporative Condensers and Cooling Towers.

**KENNARD CORPORATION • 1831 S. HANLEY ROAD ST. LOUIS 17, MO., U.S.A.**

# NEW!

## Perfection-quality... PROJECT-PRICED!

**THIS AD  
IS TELLING  
BUILDERS  
ABOUT IT!**

**AND WE'LL ALSO  
HELP YOU WITH:**

- 1** "On-the-spot" sales assistance by experienced Perfection men.
- 2** Proved program that sells homes for builders . . . installations for you.
- 3** Protection from direct factory or cut-rate competition in your territory.

**WRITE US.**

Perfection Stove Company  
7534-C Platt Ave., Cleveland 4, Ohio

### COMPARE IT!

- 14-gauge steel combustion chamber.
- 10-year guarantee.
- Direct-drive blower.
- Low Hi-Boy model saves headroom, floor space.
- Rust-proofed casing. Sunset Red baked enamel exterior.
- Cool sides insulated with fiber glass and aluminum foil.
- Easy to install. Controls factory-assembled.



G-804 shown. Gas-fired, 90,000 Btu's, readily converts to oil. F-404 Oil-fired, 72,000 Btu's, readily converts to gas.

Here's the furnace designed to save money for the builder and still give the home buyer *all* the comfort of modern, automatic heating. The frills are out . . . but Perfection quality and guaranteed performance are built in. And the *big* plus for you is that Perfection cuts complaints and service calls to the minimum. Ask your heating contractor about new Perfection PROJECT-PRICED furnaces. Perfection Stove Company, 7534-C Platt Avenue, Cleveland Ohio.



**CENTRAL COOLING, TOO!**  
Perfection heating contractors and dealers are pledged to give you service you can count on.

YOUR HOME DESERVES  
**Perfection**



PORTABLE  
HEATERS

FURNACES • HOME HEATERS • RANGES • AIR CONDITIONERS • WATER HEATERS





# FREE!

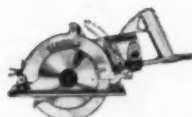
## New SKIL Blade selector

will save you time and money—  
both in everyday sawing and  
cutting difficult problem materials

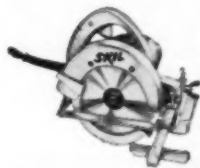
**SKIL Blade Selector** quickly shows you right SKIL Saw and Skil Blade for cutting *all metals*, as well as tile, limestone, hard woods, composition, Celotex, stone, scoring and cutting concrete, masonry, tough alloys, plastic and many other materials.

This amazing Selector tells you which SKIL Saw is just right for *your* problem—which SKIL Blade or Cut-off Wheel is the right team-mate for your saw. To get *yours* without cost, see your SKIL distributor or send coupon below!

**Only "SKIL has the answer"  
because only  
SKIL offers you all this!**



**9 Extra-Heavy Duty SKIL Saws**—with high-torque worm drive. The favorite type for over 25 years on tough metals and compositions that no other saw can handle. Absolutely minimum maintenance in heaviest service. Blade diameters from 6" to 12".



**3 Heavy Duty SKIL Builders Saws**—with high blade speed. Low in cost, light weight and easy to handle. The new SKIL Builders Saws are ideal for quick cut-off work and for use with SKIL abrasive cut-off wheels. Blade diameters: 6", 7 1/4", 8 1/4".



**98 Specially Designed SKIL Blades and Abrasive Cut-Off Wheels**—carried in stock by SKIL Branches and distributors. With the proper SKIL Saw you can efficiently cut almost any material encountered in the construction field with substantial savings in time and money.

**Only SKIL offers this  
wide selection of saws, blades and  
abrasive cut-off wheels!**



**FREE!** Ask your SKIL distributor for a SKIL Blade Selector and a FREE trial of the right SKIL Saw with the Exact SKIL Blade or Cut-off Wheel to solve your toughest cutting problem.



SKIL Corporation, Dept. AM-44  
5033 Elston Avenue, Chicago 30, Illinois

- ☐ I would like a SKIL Blade Selector
- ☐ I would like a demonstration and free trial
- ☐ Please send literature on SKIL tools

Name

Company

Street

City  Zone  State

You don't have  
to *hide*

If you have installed

# PETRO

## OIL or GAS HEATING

### Heating contractors know PETRO equipment gives dependable, economical service

It's a happy occasion when you meet old customers if you have sold them Petro heating. Chances are, they're back to tell you how much they enjoy the comfort and economy of their Petro heating . . . and to give you the names of friends who are prospects. For no other heating gives such outstanding service and fuel economy . . . no other equipment is more simple in construction or trouble-free in service.

Yes, for over 51 years heating and plumbing contractors have found Petro a quality and profitable line to sell. Why not send for complete information?

Petro, 3068 West 106th St., Cleveland 11, Ohio.  
In Canada: 2231 Bloor St. West, Toronto, Ont.

Residential Oil and Gas Burners, Oil and Gas Furnaces and Boilers,  
Industrial and Commercial Oil, Gas and Oil-Gas  
Combination Burners

# PETRO

T.M. REG. U.S. PAT. OFF.

OVER 50 YEARS OF LEADERSHIP IN  
AUTOMATIC HEATING AND POWER EQUIPMENT

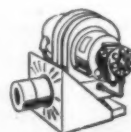


#### Oil and Gas Furnaces

Complete winter air conditioners made in popular sizes to fit the heating needs of homes from 4 to 10 rooms. Extremely compact and attractive. Real fuel-savers. Both Highboy and Lowboy models available. Lowboy shown at left.

#### Conversion Oil Burners

Specially designed to convert hand-fired furnaces or boilers to automatic oil heating. Exclusive Petro "tailored flame" is adjustable to any firebox—gets maximum heat from every drop of oil. A size for every home, or commercial need. Compact, quiet, quickly and easily installed.



#### Horizontal Oil Furnaces



For installation in limited furnace space. Hang it or hide it—this winter air conditioner fits anywhere—in garage, attic, crawlspace or basement. Completely automatic. Heats, filters and circulates the air for complete winter comfort. Available in 5 models, from 80,000 to 180,000 Btu's.

# Aerofuse Diffusers..

*... installed at the vital point  
of air delivery in the nation's first  
aluminum skyscraper ... ALCOA BUILDING*

TYPE D AEROFUSE DIFFUSERS AS INSTALLED IN ALCOA



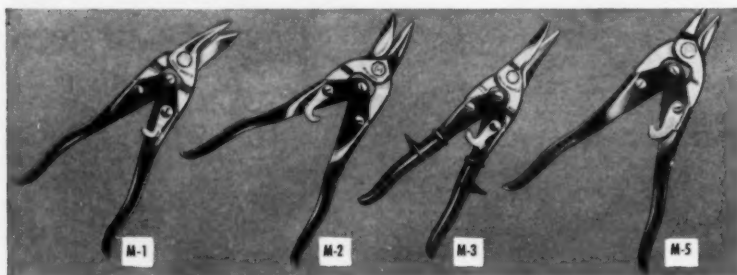
In the heart of Pittsburgh's Golden Triangle, the gleaming Alcoa Building rises thirty floors, a dramatic new concept in multi-story building design and construction. In Alcoa, as in other outstanding buildings from coast to coast — where the efficient performance and attractive appearance of air distribution equipment must meet rigid engineering and architectural specifications — Aerofuse Diffusers were selected for installation at the *vital point of air delivery*.



**TUTTLE & BAILEY inc**  
NEW BRITAIN, CONNECTICUT

# "I have used WISS SNIPS for 30 years because they cut best with least effort"

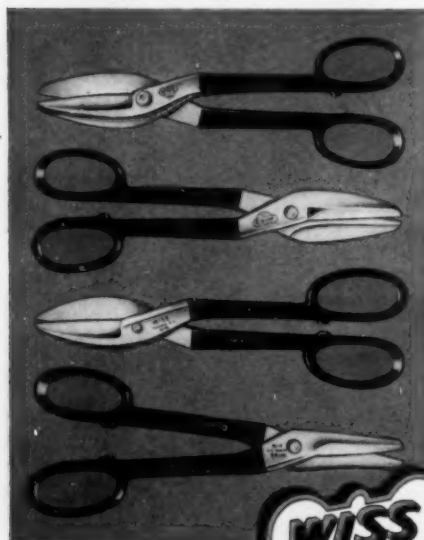
Arthur Schimmelphennig of the John Pritzlaff Hardware Co., Milwaukee, agrees with other users and distributors of Wiss metal cutting snips. There are several reasons why they are the choice of professional workers everywhere—why they sell better, with fewer returns. Wiss snips are produced largely by the handwork of skilled workers. Each pair is rigidly tested and guaranteed perfect. Bolts are set precisely to reduce wear and to increase cutting power with least effort.



**WISS METAL MASTER SNIPS:** Compound action design delivers amazing cutting power. These 10" snips cut with about one-half the effort required for standard 12½" snips. One edge serrated to prevent slipping. M-1 (cuts left) and M-2 (cuts right) are designed to cut the most intricate scrolls and circles. M-3 is for shallow arcs and straight cutting. M-5 Bulldog Heavy Duty snips are tops for notching, nibbling and cutting shallow arcs in sheet metal as heavy as 16 gauge.



Wiss inlaid blades are made of high carbon crucible steel welded to a hot drop-forged frame to provide the extra service demanded by professional workers.



## WISS INLAID SNIPS

High carbon crucible steel welded to a hot drop-forged frame provides that *extra* service demanded by professional users everywhere. Six Straight Cutting sizes from 11½" to 17", including Bulldog Snips for notching. Three Combination\* Cutting sizes, 12½", 13½" and 14½".

## WISS SOLID STEEL SNIPS

For those whose requirements are less specialized than the professional user. Hot drop-forged of fine carbon steel, they meet or exceed government specifications. Four straight cutting sizes, 8" to 12½". Four Combination\* Cutting sizes, 7", 10", 13" and 16" Bulldog Snips for notching.

\*Made with straight blades, but ground and shaped so they readily cut curves and irregular shapes as well as straight.



Wiss snips are hot drop-forged of the finest steels available.



Highly skilled craftsmen make final adjustments to assure that Wiss snips will cut perfectly for a long time.

**J. WISS & SONS CO.,**

Manufacturers of Shears, Scissors, Pinking Shears, Metal Cutting Snips and Garden Shears



**NEWARK 7, NEW JERSEY**



When you sell CHRYSLER AIRTEMP  
you've got something extra to sell with



## NOW...NEW CHRYSLER AIRTEMP "PROJECT" FURNACES designed to help you sell to BUILDERS

Recognizing the increasing influence of the project builder on new home construction and the trend to year 'round air conditioning as a "built-in" feature, Chrysler Airtemp introduces new "Project" Furnaces designed especially for this market. These new furnaces will appeal to the volume user, the project builder who wants a name people know and have confidence in—the Chrysler Airtemp name. And, these new furnaces are engineered for teaming with Chrysler

Airtemp cooling to provide perfectly balanced Year 'Round Air Conditioning.

Here is an entering wedge to the profitable builders' market in your area—a new addition to the many extras you sell with when you sell Chrysler Airtemp Heating. Take a minute to review 7 of these important extras listed below. Then fill in and return the coupon for complete facts and figures on the franchise that can give you the greatest selling help.

## 7 additional extras you sell with as a CHRYSLER AIRTEMP DEALER

**Consumer Confidence**—People know and respect the Chrysler Airtemp name—associate it with engineering leadership—have complete confidence in the products which carry it.

**Double Profit Opportunity**—Chrysler Airtemp Cooling, which is so easy to install with the new Chrysler Airtemp Furnaces, gives you the chance to sell Year 'Round Air Conditioning when you install the furnace or later—for a double profit.

**Product Leadership**—All-new Chrysler Airtemp Furnaces give you exclusive features that you can demonstrate to your prospects in terms of more efficient, more economical automatic heating.

**8-Year Warranty** on new, super-efficient, corrugated-design furnace heat exchanger gives your customers important additional confidence in their choice of Chrysler Airtemp.

**Smarter Modern Styling**—All-new Chrysler Airtemp Furnaces feature new smarter modern styling—with plenty of eye appeal for homeowners.

**More National Advertising** to consumers in leading magazines and to builders in leading building industry trade journals is steadily pre-selling prospects on Chrysler Airtemp Heating and Cooling, including many of the best prospects in your own trading area.

**More Local Selling Help**—Chrysler Airtemp gives you a broad choice of tested and proved selling helps designed to work for you in your own market over your own name. New 20-minute full-color movie makes a terrific impression on every viewer!

# CHRYSLER AIRTEMP

HEATING • AIR CONDITIONING  
for homes, business, industry

Airtemp Division, Chrysler Corporation, Dayton 1, Ohio

Airtemp Division, Chrysler Corporation  
P.O. Box 1037, Dayton 1, Ohio

Please send us complete details concerning the  
Chrysler Airtemp Franchise.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



AA-4-51

FOR OLD AND  
NEW HOMES  
**SELL**



## PREMIER FAN-AIR DIFFUSERS

AND GIVE YOUR CUSTOMERS

**Warm Walls, Warm Windows, Warm Floors . . . In Every Room!**

Scientifically designed to spread warm air fan-like over outside walls and windows, Premier's FAN-AIR Diffusers fill the need for an efficient, practical, sensibly priced baseboard diffuser. Easily installed for use with small pipe systems (as small as 4" diameter).

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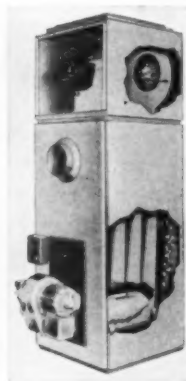
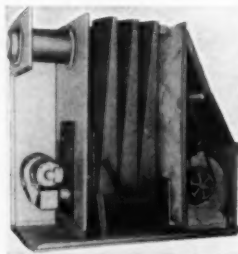
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# Dealer Must Pay Sales Commissions

. . . and abide by his original contract  
with salesmen even if certain conditions  
(type of equipment ordered, prices, costs, etc.)  
change after the contract is made

By Albert W. Gray



A SALESMAN in the air conditioning department of a warm air heating dealer recently sued to recover commissions of over \$1000, which he claimed due him under his contract. The employer refused to pay, basing his refusal on the grounds that the sale for which this commission was claimed had been made directly with the customer without the intervention of the salesman and that a special price had been made which did not permit the payment of a commission.

The contract of the salesman provided in part that he should receive \$75 a week and a 4 per cent over-ride commission on sales made by the company in the metropolitan area of an eastern city.

Negotiations for the sale of air conditioning equipment had been undertaken by this salesman with an organization that had contracted to build large numbers of houses in the area. The employer had directed the salesman to withdraw and had then completed the sale directly with the builders, offering a price reduction.

In affirming the judgment by which the salesman recovered his commission from the employer, the state supreme court said, "The employer had, of course, the right to make any promise he saw fit, but in so doing

he could not affect this salesman's rights under his contract."

### Change in Order Doesn't Release Employer

A situation very similar to this occurred a few years afterwards in a midwestern state. There the salesman was employed at a salary of \$200 a month in addition to commissions of 5 per cent on all sales made by him.

The salesman had obtained an order for over \$6000 worth of packaged air conditioners which was accepted by the company, and \$200 was paid on account by the purchaser. Before delivery, however, the customer moved his business to a new location and a different type of equipment than that specified in the original contract was agreed upon. The employer contended here that no commission was payable as a new contract replaced the one that had been originally negotiated by the salesman.

The state's appellate court, in sustaining the judgment by which the salesman recovered his commission from the company, said:

"When the purchaser gave the salesman the original order, signed the agreement and paid the deposit, the salesman became entitled to his commission. The fact that changes in the equipment were made did not release the employer from its obligation."

### Both Parties Must Act in Good Faith

The supreme court of an eastern state gave an opinion on situations of this character in deciding a case in which an employer attempted to make the earnings of its salesmen contingent on its own profits, irrespective of the employment agreement. The court said:

"Fair business dealing required the employer to accept all orders sent in by the salesman which, in the exercise of sound business judgment, the employer would reasonably be expected to accept.

"The employer did not (by entering into this agreement with its employees) place the conduct of its business

Albert W. Gray, author of this article, has had over 20 years' experience as an attorney in the courts of New York City. He has written widely on legal matters and is the author of *The Family Legal Adviser*.

in the hands of the salesmen by agreeing that all orders the salesmen secured and delivered must be accepted and filled regardless of the existence of good business principles for not doing so.

"On the other hand, neither could the salesman be expected to travel at his individual expense, as was done in this case, and be deprived of his compensation merely because the employer failed to ship the goods—regardless of valid reasons for not so doing.

"Each was bound to act in good faith towards the other. Upon receipt of orders from the salesman and their acceptance by the employer, the salesman became entitled to receive his commission in the absence of proper grounds for their rejection."

### **Salesman Can Collect on Unfilled Orders**

A decision in a lawsuit involving circumstances of this character, rendered many years ago by the supreme court of a southern state, has been followed as an authority for over a quarter of a century in the application of this feature of the law to controversies involving salesmen's commission contracts.

The salesman in this instance was to receive 6 per cent commission on "all orders booked by him, accepted and shipped," and 3 per cent on mail orders from the territory to which he had been assigned.

This salesman secured numerous orders which he forwarded the employer and which were accepted. After some of the orders had been filled, however, costs rose, with an accompanying rise in the employer's prices. Further shipments of goods which had sold at the lower prices were discontinued, therefore, and the remaining orders were left unfilled.

The employer contended he had the right to reject any orders up to the time the goods were shipped and that commissions were payable only on the goods shipped. The salesman sued for his commissions on these unfilled orders. In its decision in favor of the salesman and sustaining a judgment in his favor in the lower court, the supreme court of the state said:

"We think a fair construction of this contract is that the employer had no right to arbitrarily refuse to fill this employee's orders and that it was arbitrary to do so because of the advance in the price over that at which he had been authorized to sell and had sold.

"The provision of the contract that the commission should be earned upon the shipment of the goods determined when the commission was earned and it must necessarily be assumed in the absence of proof to the contrary that the parties contemplated shipments would be made in the usual and ordinary course of business unless some valid and sufficient reason appeared for not doing so, such as the rejection of the order by the employer's credit department.

"This employee devoted his whole time to his agency and incurred considerable personal expense in traveling over the territory in which he took the orders, for all of which he expected compensation out of his commis-

sions. So that in the absence of a stipulation that the employer might accept or reject such orders as he pleased for any reason satisfactory to himself, the employer had no right arbitrarily to refuse to ship the goods, and it was arbitrary to do so because of the advance in price."

### **Contract Not Altered by Later Contingencies**

The decision in a lawsuit in an eastern state many years ago, involving the contract of a commission salesman, has established the doctrine that contracts of this character are not altered by attendant circumstances or conditions of the business.

The letter setting out the terms of this salesman's contract read, "You are to travel over your route in this state and the two adjacent states named here at least six times each year and represent and sell our brands, but at your own expense, handling no other goods in conflict with ours, to conduct yourself and the business in a manner to our general satisfaction, for which we agree to pay you a commission upon all orders." There followed a schedule of the commissions.

After some months the employment terminated, and the salesman sued for commissions he claimed were due but which the employer refused to pay. The employer contended that the salesman was entitled to commissions only on orders taken by him and that no commissions were payable to him on orders secured by other salesmen sent by this company into the territory previously assigned to this employee.

The state court of appeals, in sustaining the contention of this salesman, said:

"Had it been the intention of the employer to limit his commissions to orders obtained and received by him, apt words clearly expressing that intent would doubtless have been used. The route was specified as his and he was given the exclusive right to sell without interference by the company or its salesmen.

"This salesman could hardly be expected to drum up customers at his own expense without receiving any benefit from sales made to such."

[Note: While this discussion applies to actual cases, it should be remembered that legal rules vary in different states.]

### **ELECTROPLATING ALUMINUM**

ELECTROPLATING on aluminum offers many advantages and is entirely practicable if proper baths and techniques are used, according to R. F. Hafer, Reynolds Metals Co. "But, as in welding aluminum, there are certain factors which must be given proper consideration," he explains. The natural oxide film present on the surface of aluminum must be removed. Electro-deposits on aluminum must be continuous, because any voids in the cathodic metals generally plated on aluminum make the base metal susceptible to localized galvanic corrosion. "The sodium zincate or zinc immersion process is now the accepted process for electroplating on aluminum," he says.

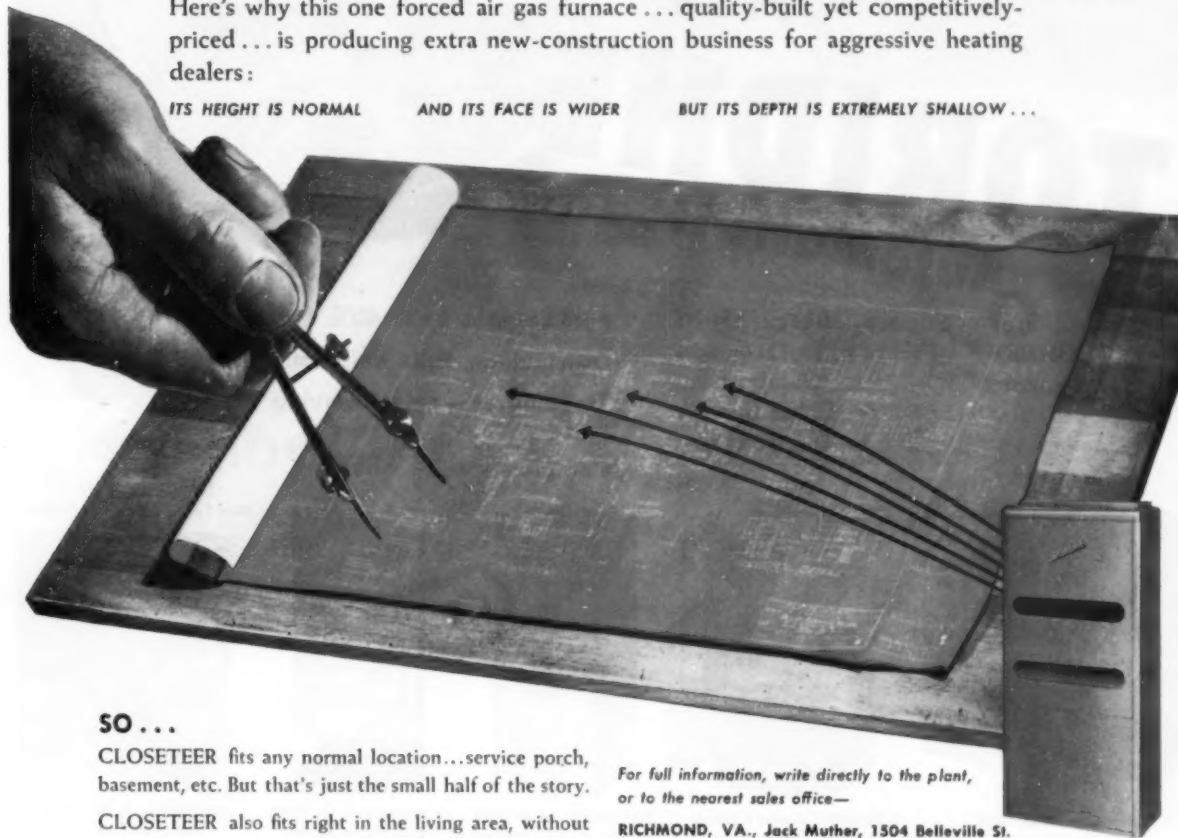
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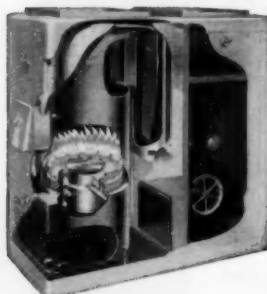


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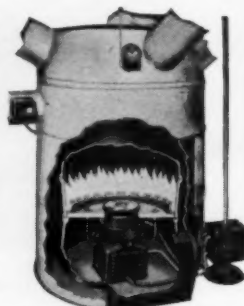
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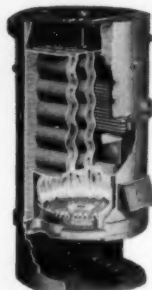
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NEW OFFICERS of the Michigan Heating and Sheet Metal Association are Alfred Klopf, Jr., president, Saginaw; James Prinz, vice president, Muskegon; and N. J. Biddle, Detroit, re-elected treasurer. New board members are John DeHaan, Sr., Kalamazoo; Fred Livingston, Muskegon; Ernest Ackerman, Bay City; and John B. Colomina, Detroit. Messrs. DeHaan, Biddle, Colomina and Ackerman pose for the camera right after their election



EARLE OOLE, retiring president of the association, opens the convention. Homer Brundage, chairman of the convention committee, is at his right

## “Cooling’s a Real Market”

. . . T. H. Smoot tells Michigan Heating and Sheet Metal Association convention at Grand Rapids.

Sales and installations of central systems are mainly through warm air heating dealers.

THE ADDITION OF cooling to a heating system is a subject “close to the hearts of all warm air men,” said Homer Brundage, chairman of the committee for the 43rd annual convention of the Michigan Heating and Sheet Metal Association, in introducing T. H. Smoot, one of the speakers. The busy, two-day convention was held in Grand Rapids, at the Pantlind.

Mr. Smoot — of Primor Products, Inc. — pointed out that cooling is “a real market, not a flash in the pan,” and that “there is a lot of money to be made in this field.”

### “Instrument for Better Living”

“Summer air conditioning for homes is not a luxury but a very practical instrument for better living,” he said. “It now has widespread public acceptance and is desired by a majority of people in most areas of the

United States. It can be assumed that where summer cooling equipment is commonly used in commercial applications (such as offices, stores and restaurants), those areas are logical places for the use of home air conditioning. The history of home cooling shows that after the commercial use of comfort cooling equipment becomes established in an area, the home cooling market then develops there.

“The record in commercial applications of comfort cooling proves that it pays dividends in better efficiency and greater productivity from workers,” Mr. Smoot said. “The same dividends will result from air conditioning homes, but in addition to that there will be many other benefits.

“Questionnaires returned from owners of homes equipped with summer air conditioning systems have included the following comments which indicate some of the additional benefits: ‘When we go away from the house



AT THE BUSY registration desk. From left to right are Lee W. Gillespie, Doremus L. Mills, N. J. Biddle and Ruth Keys (and the back of an unidentified registrant)



"THERE'S A LOT of money to be made in residential cooling work," T. H. Smoot tells an attentive audience at one of the convention sessions

we know the windows are closed and we aren't worried about storms or other changes in the weather'; 'With the windows down it is a lot cleaner in the house and housework is a lot easier'; 'We save on the expenses of re-decorating and the cleaning of house furnishings because the house is closed against the entrance of outside dirt'; 'It helps keep the family together during hot weather'; 'We enjoy television all year since we installed air conditioning'; 'It took air conditioning to spare us from the noise and dirt of the heavy traffic in our neighborhood'; 'We don't spend nearly as much on movies, eating out, or vacations as we used to.' A surprising number of people mentioned health and general well being of the family. Middle-aged and older people frequently mentioned health benefits and told of doctors having suggested that a cooler environment would lighten the extra burden on the heart that is caused by high temperature and humidity, as well as being generally beneficial.

"Some of the economies associated with living in a home that is equipped with comfort cooling equipment are indicated in the comments quoted above, and there is little doubt that a substantial part of the cost of operating a domestic comfort cooling system may be recovered just by avoiding the expenses that would otherwise be incurred in going places and doing things to get relief from oppressive heat. I have heard builders say that many owners of homes which they have equipped for summer air conditioning have told them that they think the system pays for itself because of these many offsetting economies," Mr. Smoot stated.

### 100,000 Central Systems

"It is estimated that 50,000 homes were equipped with central comfort cooling systems in 1953 and the predic-

tions for 1954 are for 90,000 to 150,000 central systems for homes. When you take into consideration the great amount of publicity behind central cooling for homes, the excellent equipment now available at reasonable prices, and the increasing number of companies now marketing it, I think 100,000 such systems to be a very realistic minimum figure for 1954," he said. "Most of the larger warm air furnace manufacturers are now marketing cooling equipment.

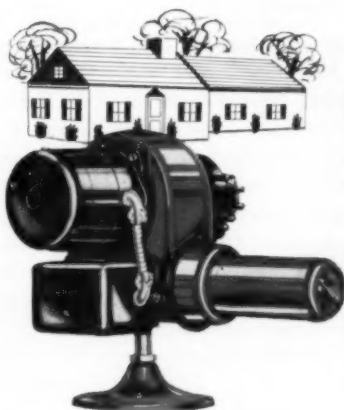
"In 1946, 48,000 packaged air conditioners were sold and in 1950, only four years later, 250,000 of those units were sold," according to Mr. Smoot. "The sales of home central comfort cooling systems in 1953 compare almost exactly with the number of packaged air conditioners sold in 1946 and if the same rate of growth is applied to home central systems, there will be 250,000 homes equipped with these systems in 1957. This tremendous immediate potential should attract all elements of the central home heating industry to activity in the central home cooling equipment business so that, in this early and formative stage, they will establish themselves as the channels through which this equipment will be sold, installed and maintained. In the course of the discussions at an air conditioning panel held at the National Association of Home Builders' convention in January, the prediction was made by builder members that, in approximately five years, and throughout most areas of the United States, homes selling for \$12,000 or more will be equipped with summer air conditioning systems. While it is true that in the past the greatest activity in home comfort cooling has been in the South and Southwest, those areas no longer constitute the greatest active market. Consider the comments in the questionnaires returned from users of home air conditioning systems that were previously quoted and you will plainly see that the reasons given do not apply to one section of the country

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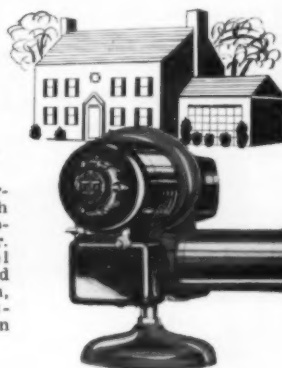
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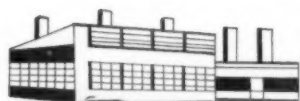
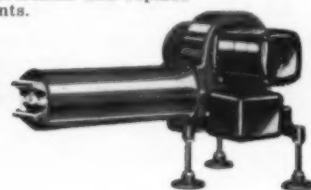
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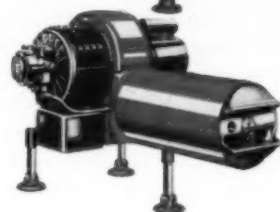
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but apply to most of the areas of the United States," he said.

"The window air conditioning unit has its place, as no one can dispute," Mr. Smoot pointed out. "For apartments and rented properties and for many existing homes it is the logical purchase for the individual to make. But for the new home and a part of the existing home market, the central system is preferred. A very important consideration in favor of the central system is that the open end mortgage permits the time financing of the permanently installed central system," he said.

### Cost of Operation

"The cost of operating a comfort cooling system is a significant expense," he said, "but some major part of it is recovered through offsetting economies resulting from changes in living habits. It is possible, in the absence of actual records of cost of operation, to present the basis for evaluating operating costs.

"On the basis of an average water cost of \$2.50 per 1000 cu ft, the cost of condenser water for a waste water system is 3 cents per ton per hr of operation. This is figured on the basis of  $1\frac{1}{2}$  gpm per ton which requires 90 gal per hr per ton. (1000 cu ft equals 7480 gal). This water rate is based on the assumption that city water is available at a temperature of not more than 75 F. One ton of refrigeration will, on the average, draw 1.1 kilowatt for the compressor. On the basis of  $2\frac{1}{2}$  cents per kwhr, the cost of operating the compressor for one hour amounts to  $2\frac{3}{4}$  cents. This gives a total of  $5\frac{3}{4}$  cents per hr without allowing for the power to operate the blower motor. If in this area (meaning Michigan) we assume that there will be a total of 600 hours of compressor operation during a normal summer, the total expense (blower not included) will be  $600 \times 5\frac{3}{4}$  or \$34.50 per ton per season. The water expense can be practically eliminated by using a cooling tower which saves 95 per cent of the water used in a waste water system and where approximately  $\frac{1}{4}$  hp per ton in motors would be substituted for the water cost. On the basis of  $2\frac{1}{2}$  cents per kwhr, the power cost of the tower would be  $6/10$  cents per ton per hour. This would then reduce the hourly cost per ton to a total of 3.35 cents, not taking into consideration the 5 per cent water requirement and the blower motor operation. On the basis of this lower hourly cost, the seasonal cost in this area per ton of cooling would be \$20.10. I think a very liberal all-inclusive cost per ton per season for such a system, including the small tower water requirement and the power for the blower motor, would be \$25," he said. "Therefore a 2 ton system would not exceed a cost of \$50 to operate for the season and a 3 ton system would cost \$75.

### Sales Are Through Warm Air Dealers

"The sales and installations of central cooling systems for homes are largely taking place through warm air

heating dealers," Mr. Smoot said. "The warm air heating dealer has acquired the techniques involved in the installation of a central cooling system because these techniques are so similar to those employed in installing a forced warm air heating system. He is, therefore, especially well qualified to engage in this rapidly growing home cooling industry.

"The similarity in the functions of these two types of central systems may be listed as follows:

"1) Air is circulated by a blower.

"2) The air is distributed through ducts and registers or other air outlets.

"3) The air is filtered.

"4) The air temperature is changed (raised in heating, lowered in cooling).

"5) Moisture control (moisture added in heating, removed in cooling).

"Of course, heating equipment size is determined by a heat loss calculation; cooling equipment size determined by a heat gain calculation.

### Figuring Cooling Capacity

"Basically, the difference between heat loss and heat gain calculations is that while in both you consider conduction through physical barriers such as walls, doors, windows, floors and ceilings, in the case of cooling you take into consideration also the heat gain from the sun and the heat and moisture load from ventilation air and occupants and domestic processes that are carried on within the conditioned space. The calculation of the heat gain for a home is a less involved process than for commercial and industrial installations. In commercial and industrial installations, most of the heat gain is from people, lights, processes and equipment. In the home, it is from the sun and from the difference between the inside and outside air temperatures. Therefore, in commercial and industrial cooling, the heat gain is usually more from internal conditions, whereas in domestic installations it is primarily from external conditions," he stated.

### Servicing the Refrigeration Circuit

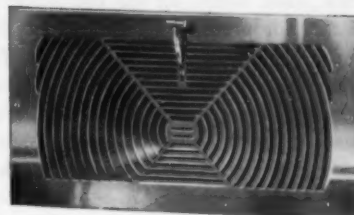
"Manual 11, issued by the National Warm Air Heating and Air Conditioning Association, does not cover in any way the operation of the refrigeration circuit itself and, whether or not the skills necessary to do service work with a refrigeration circuit must be acquired depends upon the type of refrigeration circuit that is used in the central cooling system," Mr. Smoot said. "Insofar as the need for these skills is concerned, it depends upon whether a hermetic system or a non-hermetic system (sometimes called a serviceable hermetic system) or a semi-hermetic system is used. A fully hermetic system is constructed so that no provision is made for breaking into the circuit that conveys the refrigerant, whereas a non-hermetic system does allow for the opening of the system in the field and incorporates valves for charging



# YOUR CHOICE OF REGISTERS CAN MAKE OR BREAK THE JOB!

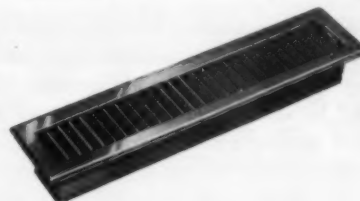
**IN PERIMETER HEATING, FOR INSTANCE** — unless the diffuser you choose completely blankets the outside wall or window area to trap the infiltration of cold air before it reaches the room occupants, an otherwise fine installation can be thoroughly spoiled.

Satisfactory results can not be obtained with either the conventional air conditioning register or an improperly designed perimeter diffuser. Why not be sure you are always right by using only the carefully engineered, thoroughly proven H&C DIFFUSAIRES. The line is the most complete in the industry — offering a wide choice of installation types. Each is attractively designed, assures complete customer satisfaction, and eliminates the costly service calls that are always involved in a job that is less than par. See them at your H&C Jobbers' or write for complete details.



**H&C No. 40  
SIDEWALL DIFFUSAIRE**

Provides 180° air pattern to completely blanket the outside wall of an average room . . . at low velocity. Positive balancing adjustment.



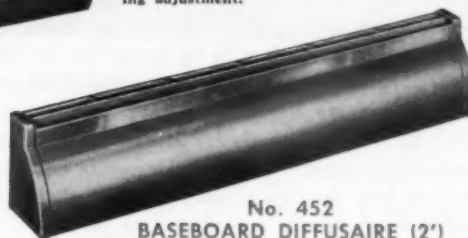
**No. 411 — DIFFUSAIRE**

Has opposed louvers, provides ideal air pattern regardless of volume. Positive balancing adjustment.



**No. 44 SERIES**

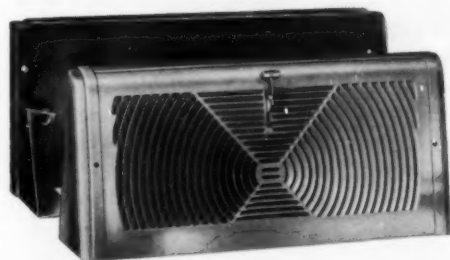
Continuous Baseboard type, for installations of 8' or more. Furnished in 2' or 4' units, KD. No disassembly or lining up of screw holes necessary. Precision parts snap together without need of tools . . . an important time-saving feature. Damper available with balancing adjustment.



**No. 452**

**BASEBOARD DIFFUSAIRE (2')**

Same construction as No. 44 Series with additional top perforations for greater volume (equal to 8' continuous type section). No cutting of bottom panel required. High throw makes it ideal for cooling as well as heating. Available with damper for balancing.



**No. 405  
BASEBOARD DIFFUSAIRE**

Particularly good for old construction. Provides same air pattern as our No. 40 Sidewall series. No stackhead required.



**HART & COOLEY** MANUFACTURING CO.  
500 EAST EIGHTH ST., HOLLAND, MICH.  
In Canada: Hart & Cooley Manufacturing Co., Fort Erie, Ontario

PRODUCT OF THE WORLD'S LARGEST and MOST PROGRESSIVE PRODUCERS OF REGISTERS and GRILLES

the system. Some heating contractors who use non-hermetic systems learn the skills necessary for servicing the refrigeration circuit or add to their organization an experienced refrigeration man, while other contractors pay refrigeration service companies to complete the installation and for charging the refrigeration system.

"Hermetic systems are completely integral systems that are fully charged and sealed tight at the manufacturer's plant, where all the equipment and services are available for producing systems that are completely dry and free of non-condensibles. These systems are similar to the domestic refrigerator. They have only a small refrigerant charge and do not use liquid receivers and expansion valves but employ capillary tubes for the flow of refrigerant from the condenser to the expansion coil. These systems should be just as trouble-free as domestic refrigerators if there are comparable facilities and quality controls in the plants where these systems are assembled," he said.

### Water Supply a Problem

"Water is becoming critically short in its availability in many areas, and therefore, in some localities, waste water systems are either not permitted or are not practical," he said. "Water cooled systems in such localities should employ a water saver. Some companies are now developing water towers as complete packages incorporating the water pump installed as a part of the tower. Towers must be quiet in operation and acceptable in appearance. They can be installed either inside or outside the building. As an indication of present costs of mechanical draft towers, 3 ton towers are being quoted at \$125. A pump with a 1/2 hp motor can be obtained for \$60. An average installation cost of \$125 may be assumed, bringing the total cost of such a tower to \$310," Mr. Smoot remarked. "If a waste water system is installed in an area where water is now in ample supply and there later develops a water shortage, the originally installed equipment is not affected at all, but the condenser water is merely piped to a cooling tower instead of to the city water system.

"The water supply problem has been the reason for the development of systems employing air cooled condensers in the place of water cooled condensers. I don't think anyone can predict which system will predominate in the future," Mr. Smoot said. "There are favorable and unfavorable conditions associated with both systems. Water towers have to be cleaned and painted at intervals and they have to be drained before winter to avoid freezing. Air cooled condenser equipment likewise requires cleaning of the condenser exterior surfaces because filters are not used ahead of these surfaces and fibrous material has a tendency to collect on the entering surfaces and restrict the air path. There is also the problem of noise from the considerable volume of air being moved and the question of where it will be discharged. Finally, there is the inherent operating characteristic of an air cooled system — as the ambient

temperature rises, there is less cooling at the condenser and the head pressure rises, and the cooling capacity falls off. The result is that when you need the most cooling capacity you get the least, and therefore, a greater rated tonnage has to be installed for equivalent cooling capacity under design load conditions," he said.

### Ducts and Blowers for Cooling

"Heating contractors are particularly interested in the ductwork requirements of central cooling systems," Mr. Smoot remarked. "These are adequately covered in Manual 11 for the sizes of systems the manual is written to include. There is the need for exercising good judgment in determining whether a duct system and blower are adequate to produce good cooling comfort. In this general area (Michigan), where I believe the design temperature for heating is -10 F, the cfm requirements for heating should be adequate for cooling, and this greatly simplifies the problem because the sizes of ducts installed for heating will be of sufficient capacity for cooling," he said.

"There is, however, the question of whether the blower and blower motor are of sufficient size, and in this connection there is the question of at how high a speed a conventional furnace blower should be turned over. I would say 900 rpm is a maximum speed considering the structural characteristics of a blower wheel, its initial balance, and the tendency to lose balance by the adherence of dirt to the fan blades," said Mr. Smoot.

"Regardless of that opinion, we are faced with the necessity for moving the air against a higher resistance," he said. "It is customary to rate condensing systems on 400 cfm per ton of refrigeration and the Manual 11 information on that subject states that 400 cfm per ton is desirable under average latent load conditions but it also gives 300 cfm per ton as being a permitted minimum. In a parallel system, which generally incorporates a separate blower for cooling, the static head the blower must work against will generally be increased by at least 0.17 in. of water. That is on the basis of 0.25 in. of water drop across a wet evaporator as compared with 0.08 across a furnace. In the case where the furnace blower is used and the cooling coil is used in series on the downstream side of the furnace, the added resistance is at least 0.25 in. A 9 in. blower wheel with a 1/4 hp motor should be regarded as an absolutely minimum combination for a 2 ton parallel flow system and a 10 in. blower with a 1/3 hp motor the minimum for a 3 ton parallel system," Mr. Smoot concluded.

\* \* \*

Mr. Smoot's talk on the application of cooling to warm air furnace installations, reported above, was one of several informative discussions given at the convention. Because of its timeliness and interest, it has been given practically in its entirety here. Other of the information presented will be reported upon in a second article.

in  
summer

cooling...

your profits  
are higher  
when you sell

Hop on the bandwagon Weir-Meyer helped build! Almost overnight . . . summer cooling for the home opens a vast new market — but it took years of behind-the-scenes development, aided by Weir-Meyer pioneering! Today's Meyer Marvellaire Air Conditioners . . . built specifically for the home — and priced to sell for as little as \$30.00 a month — are the products of almost 20 years experience in cooling engineering. Dealers have learned that experience counts! It can be translated into "fewer costly service calls", "easier installation", "greater customer satisfaction"! These are but a few of the reasons why . . . in summer cooling — your profits are higher when you sell Meyer!

# MEYER

## Marvellaire

Marvellaire H-3 home cooling unit with  
Meyer B-1 furnace

MEYER Marvellaire Air Conditioners are compactly built with hermetically sealed compressors to assure quiet operation . . . long life. Can be installed on any forced air heating system . . . or as a companion to a Meyer Winter Air Conditioner for ideal year 'round air conditioning.

*Write for full details on profit possibilities . . .*

Marvellaire HC-30 home cooling unit with  
Meyer B11-150G



*dependable  
since 1866*

MEYER FURNACE COMPANY, Dept. A-4 Peoria 2, Illinois

Gentlemen:

Please send me full details on Meyer Marvellaire Air Conditioners . . . plus information on complete Weir-Meyer line, at no obligation.

Name

Address

City  State

**THE MEYER FURNACE COMPANY**

PEORIA, ILLINOIS

Manufacturers of Weir & Meyer Home Heating  
and Cooling Equipment

# Replacing Cooling System Parts

(Continued from page 67)

heat laden vapor is drawn into a compressor which raises its pressure. In small air conditioners of the residential size, compressors are usually of the reciprocating type. They have pistons moved in cylinders by means of connecting rods and crank shafts. They have two sets of internal valves which function automatically as vapor moves through the cylinders. The moving parts require bearings which are subject to wear. If the compressor is not of the hermetically sealed type, it will have a shaft seal. Because of its moving parts and valves, the compressor has inherently high maintenance needs.

From the compressor, the vapor moves to a second heat exchanger, called a condenser, where sufficient heat is removed from it to cause it to return to the liquid state once again. The condenser may take different forms depending upon whether air or water is used as the condensing medium. When air cooled condensers fail, it is for the same reasons that evaporators may fail. Water cooled condensers cause trouble due to clogging or scaling of the water side of the tubes.

Upon leaving the condenser, newly formed liquid refrigerant returns to the evaporator by way of the receiver (if used) and the expansion valve (or restrictor tube). Expansion valves have moving parts which can fail. Thermal expansion valves have sealed power elements which can fail due to leaks. Restrictor tubes can fail due to clogging. Liquid line strainers are usually used ahead of expansion valves and restrictor tubes, to protect them. Strainers themselves sometimes may cause trouble if they become overloaded.

In addition to the major components of the refrigeration system there are several auxiliary parts which act as safety devices or controls. Fig. 1 shows three such parts — the high and low pressure cutouts

and the water regulating valve. Cutouts can fail electrically or mechanically. The valve failure would be mechanical.

We have now named nine components of a refrigeration system as follows: 1) Evaporator, 2) compressor, 3) condenser, 4) receiver, 5) liquid strainer, 6) expansion valve or restrictor, 7) high pressure cut-out, 8) low pressure cutout, and 9) water regulating valve. Any of these components may fail for one reason or another, some having a greater potential frequency of failure than others. The removal and replacement of any of them require breaking into the refrigerant-containing part of the air conditioner.

## Removing the Evaporator

Whenever a service man has to break into a refrigeration system he will, if he can, 1) retain as much of the refrigerant as possible in the system, and 2) keep as much dirt and air as possible out of the system. With these objectives in mind, let us again refer to Fig. 1.

We will assume that for some reason the evaporator is to be replaced. Perhaps it became damaged in shipment. From our previous discussion, we know that liquid refrigerant flows to the evaporator from the condenser. We also know that the liquid changes to vapor in the evaporator and is constantly being removed from it by the compressor. In order to clear the evaporator of refrigerant, we shut off the supply of incoming liquid by closing liquid line valve *A*. Running the compressor will cause the liquid remaining in the evaporator to boil off and pass through the compressor to the condenser where it is changed back to a liquid. Finally, the liquid drains into the receiver where it is stored. As the compressor is "pumping out" the evaporator, the suction pressure gage *P<sub>s</sub>* should be watched. As soon as the gage indi-

cator drops into the vacuum region, the compressor may be stopped and valves *B* and *C* closed tightly. Valve *A* should be cracked open long enough to raise the pressure in the evaporator to atmospheric or slightly above. This will prevent air from rushing into the system as it is cut open to remove the evaporator. If the air were allowed to rush in to break the vacuum, it might carry dirt and moisture with it.

An examination of Fig. 1 shows that we have "bottled up" the refrigerant in the "high (pressure) side" of the system between valves *A* and *C*. Our original intention was to remove the evaporator, which we can now do with a minimum loss of refrigerant. It should be apparent that we can likewise remove any of the other components in the "low (pressure) side" of the system—such as the compressor, low pressure cut-out, expansion valve, and liquid line strainer.

Let us proceed with our plan to remove the evaporator. After the system has been prepared as outlined above, we can safely open soldered joints in the suction and liquid lines. Soldered joints in refrigerant lines are made with high melting point, hard solders containing silver. They must be heated evenly with an acetylene torch to melt the solder. Open ends of the lines should be taped shut in order to keep out foreign matter unless a new evaporator is to be installed immediately. Ends of the defective evaporator should also be sealed if the unit is to be re-conditioned.

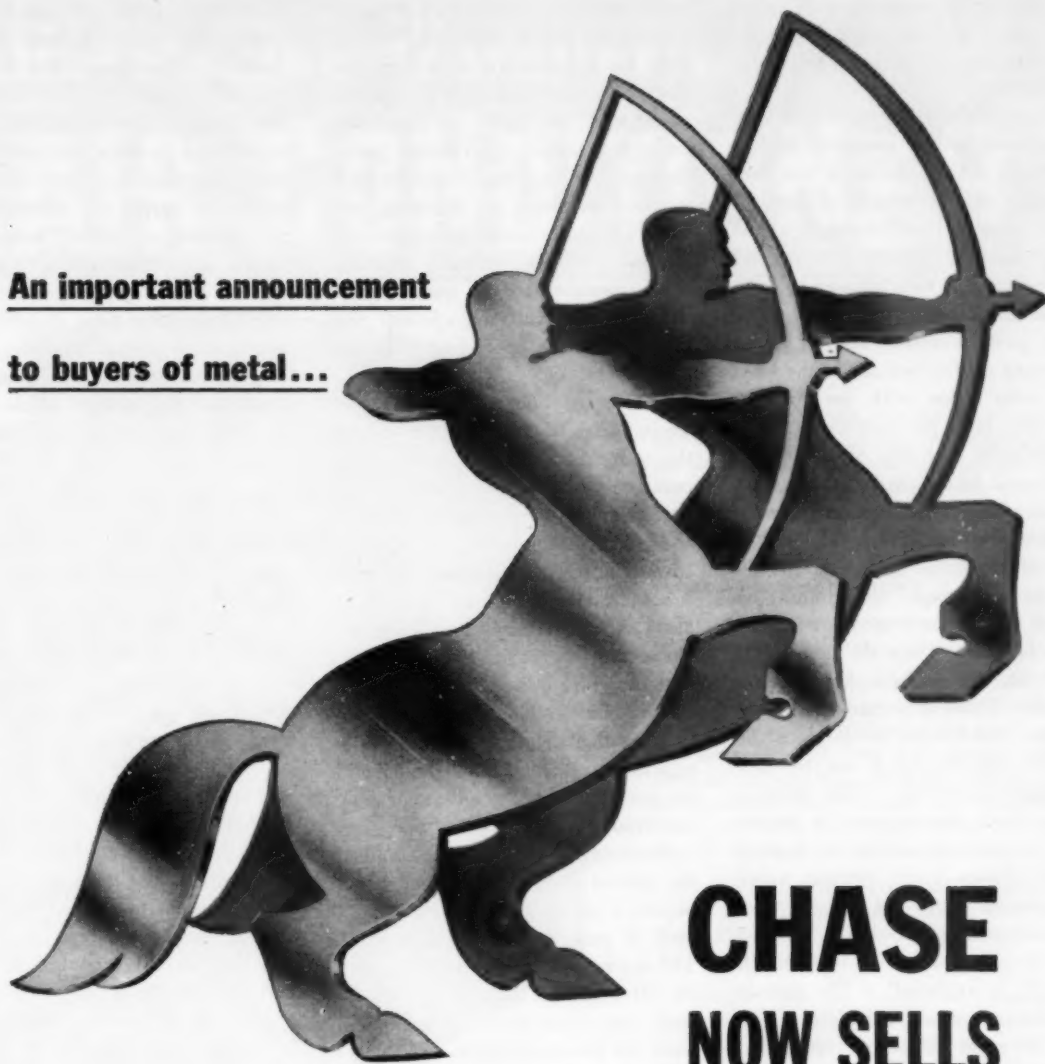
## Installing New Evaporator

The first step toward installing the new evaporator is to remove the tape from the ends of the lines and clean each end to the bright metal with fine emery or a file. Care must be taken so as not to drop scrapings or dust into an open end of the line. After the ends are



An important announcement

to buyers of metal...



# CHASE NOW SELLS STAINLESS STEEL, TOO

**Sheets, Plates, Bars, Wire, Pipe and Tubing now available through Chase warehouses and sales offices**

Now you can get Stainless Steel from Chase! Along with our regular brass and copper products, Chase can now supply Stainless Steel.

This line has been added as an extra service to metal buyers. Now you can get Stainless Steel, brass and copper from the same source. The same cutting facilities provided on

regular Chase products are now available on Stainless Steel orders, too. Anything not in stock locally can be shipped promptly from another Chase warehouse or from the mill.

**For service...for quality...** in Stainless Steel, too, call your nearest Chase warehouse or sales office.

**Chase**   
**BRASS & COPPER CO.**

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CHASE BRASS & COPPER CO., WATERBURY 20, CONN., Warehouses and Sales Offices at:— Albany? Atlanta Baltimore Boston Chicago Cincinnati Cleveland Dallas Denver? Detroit Houston Indianapolis  
Kansas City, Mo. Los Angeles Milwaukee Minneapolis Newark New Orleans New York Philadelphia Pittsburgh Providence Rochester? St. Louis San Francisco Seattle Waterbury (sales office only)

cleaned, the new evaporator is bolted into place, and the piping connections are remade in preparation for resoldering.

Copper lines scale rapidly if they are heated in the presence of air. Although this scale is of no consequence on the outside of lines, it could cause serious damage to the compressor or restrict the flow of refrigerant if it were allowed to form on the inside of the lines.

To prevent inside scaling, it is necessary to displace air in the lines that were open with an oxygen-free, dry, inert gas such as nitrogen. Accordingly, a bottle of dry nitrogen should be attached to the suction line in place of the suction gage  $P_s$ , as shown in Fig. 2. The gas is allowed to escape slowly to the atmosphere through the joints on either side of the evaporator as they are soldered. Once the new joints are tight, the nitrogen bottle is removed. Valve  $A$  is cracked slightly to allow refrigerant to displace the nitrogen by forcing it out through the gage connection. The blowing out process requires only a matter of a few seconds and in the type of system shown (with thermal valve and receiver) will not seriously deplete the refrigerant charge.

After the brief blowout period, gage  $P_s$  is replaced. The system is now once again complete. Before it is put back into operation, however, the tightness of the newly soldered joints and the newly made gage connection should be tested with a halide torch-type leak detector. If no leaks are found, valves  $A$ ,  $B$ , and  $C$  may be fully opened. If (as we have indicated on Fig. 1) a thermostatic expansion valve is used, the control bulb is re-attached to the coil suction line. The compressor may now be started.

### Readjusting the System

A change of the type described will usually require a readjustment of the expansion valve control setting. As discussed in earlier articles of this series, the thermostatic expansion valve meters refrigerant to the cooling coil at a varying rate

to maintain the temperature of vapor leaving the coil at about 10 F higher than the temperature of the refrigerant which corresponds to the suction pressure. In order to check the valve for proper adjustment (after first getting all other variables such as head pressure, air quantity, and inlet air temperature in proper relationship) it is necessary to strap a thermometer to the suction line. This plus the suction gage will give the information needed to make the adjustment.

Let us go one step further and assume that we have tried to adjust the valve but that the lowest temperature differential (suction line superheat) we can obtain is well above the 10 F desired. This is a strong indication that the system is low in refrigerant charge. (This is also an indication that the power element of the valve is defective or that the valve or strainer is clogged, but we shall rule out these possibilities for this discussion). The high superheat in the suction vapor will be accompanied by an abnormally low reading of the suction line gage.

Assuming that we have concluded the system to be low in charge, we obtain a small drum of refrigerant and, if possible, a weighing scale. The drum is placed on the scale with its valve at the top. This will assure that vapor and not liquid will leave the charging drum. The valve on the drum is connected to the valve in the suction line from which the suction gage has been removed. The connecting line either should be flexible tubing or should be long enough so as not to affect the weighing. Before the system end of this line is tightened, the drum valve should be cracked briefly, then closed, in order to allow refrigerant to displace air in the line. The suction gage should be re-attached beyond the charging connection or a charging manifold with gages should be used so that suction pressure can be checked during charging. Fig. 3 shows the arrangement described.

When all preparations are completed, the compressor is started and the system is run long enough to stabilize (perhaps 15 minutes). The

valve on the drum is cracked and the gage valve on the system at  $P_s$  is opened. The compressor will pull refrigerant vapor from the drum into the system. Several ounces should be allowed to enter, the valve at  $P_s$  then being closed. After running an additional period for restabilization, the suction superheat temperature should be checked again. The process of charging small amounts of refrigerant at a time should be repeated until enough has been added to give the desired superheated suction vapor temperature within the adjustment range of the thermal valve.

### Sight Glass Can Be Used

The procedure for determining whether or not a refrigerating system has sufficient charge can be simplified somewhat if a sight glass is installed in the liquid line as shown on Fig. 3. When the system is in operation, low charge will be indicated by the sight glass if the liquid passing through it is full of bubbles making it look milky white. The bubbles are actually vapor escaping from the condenser due to the fact that there is not enough refrigerant in the system to form a liquid seal in the line to the expansion valve.

When there is enough charge in the system, there will always be enough liquid covering the opening where the liquid line leaves the condenser to prevent vapor from escaping. When such is the case, liquid in the sight glass will be clear, and flow will be barely perceptible. Once the correct charge is in the system, the thermal valve should be adjusted by means of the thermometer and the suction pressure gage as described above.

Readers who are familiar with the operation and adjustment of refrigeration systems will recognize that the system illustrated has been provided with just about all the components a service man could ask for. Thus, since a receiver and thermal valve are used, the exact amount of refrigerant charge in the system is not critical. Valve  $A$  has been included to make it easy to "pump down" the

(Please turn to page 132)

# Here's the installer's AIR CONDITIONER



"Armstrong Companion Unit"  
Summer and Winter Air  
Conditioners, with Automatic  
Changeover Damper

Now, with Armstrong, you can sell summer air conditioning without excessive installation and service costs. *No handling of refrigerant.* No intricate valves to set. No interior wiring. Every Armstrong unit is ready to produce refrigerated, filtered and dehumidified air *when you receive it*, once the cabinet is assembled and outside connections are made.

With it, you profit from the skills and the equipment you now have.

Afraid of service complications? You needn't be. A written five-year guaranty on the *entire* hermetically-sealed refrigeration unit goes with each air conditioner. Even if the unusual happens, and this unit fails, you simply slide it out of the cabinet, slide in a new unit (obtained from your nearby Armstrong wholesaler), and ship the defective unit back to the factory.

Normal service includes cleaning the condenser and drip pan, and replacing dirty air filters. That's all. You never need to break into the refrigerant system.

A complete line, too. Vertical and horizontal "Companion" models for use in connection with any good warm-air furnace. "Package unit" space coolers for use without ducts. All in a range of sizes to cool any home or storeroom.

Call your Armstrong wholesaler today. Get the air conditioning *profit* picture. Or drop us a line for specification sheets.



Armstrong's two huge plants serve both sides of the continent quickly, economically. A warehousing distributor, with a complete Armstrong inventory, is within a stone's throw of everywhere. Wherever you are, Armstrong's distribution system is set up to serve you. It's better, quicker, more profitable . . . for you.

Please address Dept. AA at our plant nearest you.

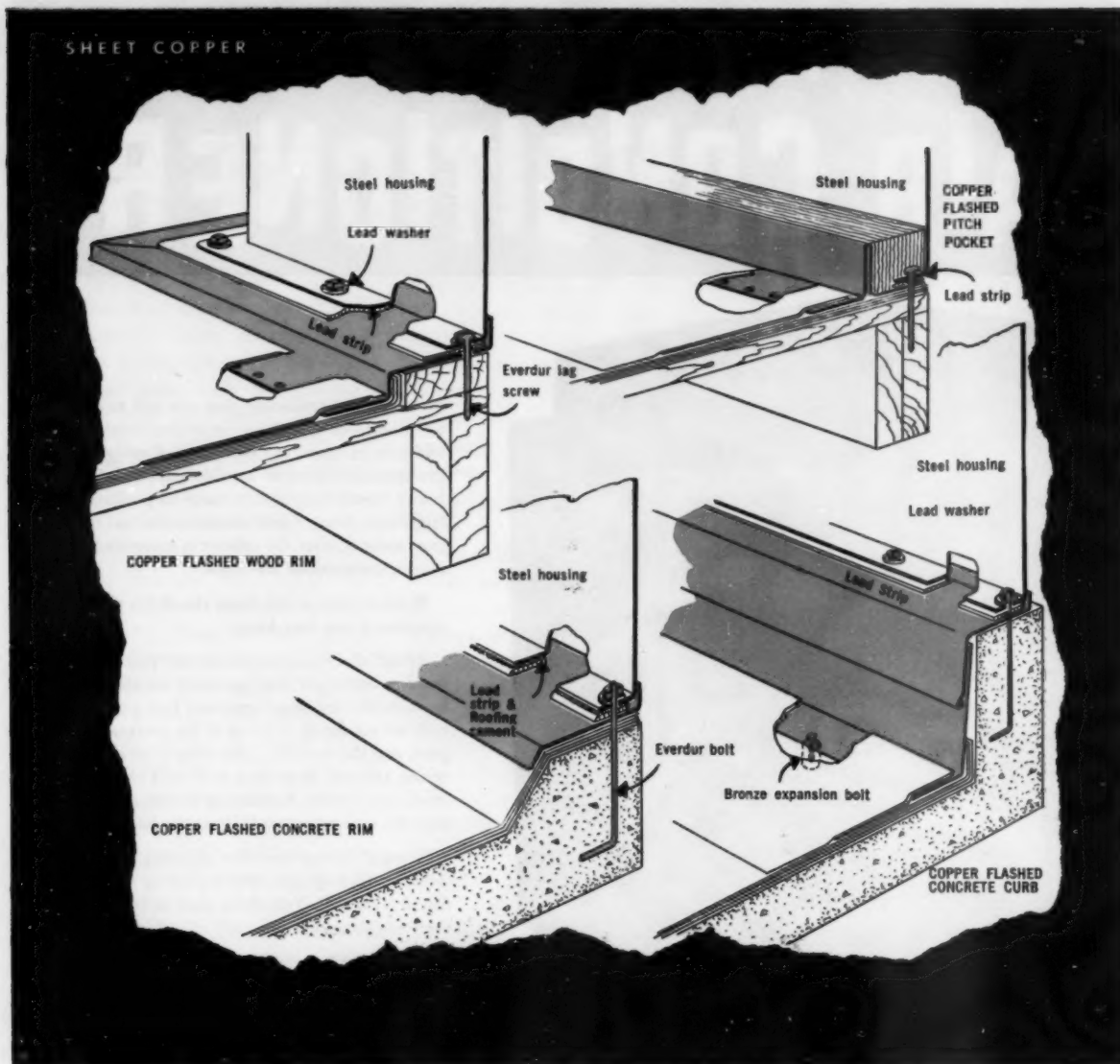
**ARMSTRONG**  
FURNACE COMPANY

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DES MOINES,  
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**A Complete Line**  
Warm-Air Furnaces — Gas, Oil, Coal  
Summer Air Conditioners



## ROOF CURBS: flash them with COPPER for lasting protection

Modern flat-roof buildings usually have one or more construction features calling for roof curbs. These are: penthouse for stairs, skylights, ducts, vent pipes for plumbing, flag-pole base, stub columns and many more. Properly flashed curbs keep

standing or wind-driven water from leaking into the building at these points.

Shown here are several curb flashing details for both fireproof and wood construction. Flashing for a piece of equipment with a metal

housing, such as a roof fan or dust collector, is also shown. Lead strips and washers isolate one active metal from the other. In general, use 16 oz. copper of cornice temper for all curb flashing.

6483



Do you have the **FREE Anaconda file of drawings**? Each drawing shows a new or improved way to apply sheet copper. Each is printed on a separate 8½ x 11 page, handy for quick-reference filing. This series may be obtained absolutely **FREE** by writing for Portfolio S to **The American Brass Company, Waterbury 20, Conn.** In Canada: **Anaconda American Brass, Ltd., New Toronto, Ont.**

For sheet and roll copper an

**ANACONDA®**

Distributor will serve you best

AMERICAN ARTISAN, APRIL 1954





PLAQUE FOR outstanding service is awarded by Don Dieterle (left) to Clarence Christen



RECEPTION COMMITTEE greets Ray Quiggin of Cleveland (second from left). The committee consists of Robert Spragg (left), Lee Gillespie and Lee Jones (right)

## *The Best in*

# Products, Service, Sales Techniques

**. . . should be the dealer's aim, according to speakers at Ohio sheet metal convention. They offered technical pointers, advice on business management**

IF YOU want to sell and install more heating and cooling equipment in '54, you have to follow two main lines of action:

Continue to give the customer the best in products and service.

*Let him know you're doing just that!*

This was the advice offered to members of the Ohio Sheet Metal Contractors' Association in two major speeches delivered at their 40th annual convention, held February 22 to 24 at the Hotel Deshler-Hilton in Columbus.

These and other addresses (which covered various phases of business management as well as technical information) were followed by the election of officers. The association's new president is J. Jacobson, Cincinnati; vice president is Leo Budde, Dayton; treasurer, Don E. Dieterle, Toledo; and secretary, William C. Lumm, Toledo. Members also elected four new direc-

tors to serve for three years. They are Harry C. Fravel, Jr., Philip C. Young, E. W. Kramer and Don Dieterle.

## **A Systematic Approach to Selling**

In a key convention speech, "You Gotta' Work to Sell in 1954," Frank Nunlist, Mueller Climatrol Div., Worthington Corp., stressed that the dealer should let customers know just how good his products and services are. Referring mainly to the heating market, he divided prospects into three main classes — each requiring "selling attention:"

Those who are going to build.

Those who are going to modernize.

Those who haven't yet made up their minds to do either.

He pointed out that much advertising should be di-

(Please turn to page 110)



*Electronic Moduflow was installed in this Cleveland home by the Universal Sheet Metal Co. of Cleveland, whose owners, Mr. Louis Drucker (left) and Mr. Morris Davis, are shown here. They've watched their Moduflow sales increase tremendously in the entire Cleveland area.*

## “That Electronic Thermostat Outside the House Booms our Sales”



*—say Cleveland heating dealers Louis Drucker and Morris Davis*

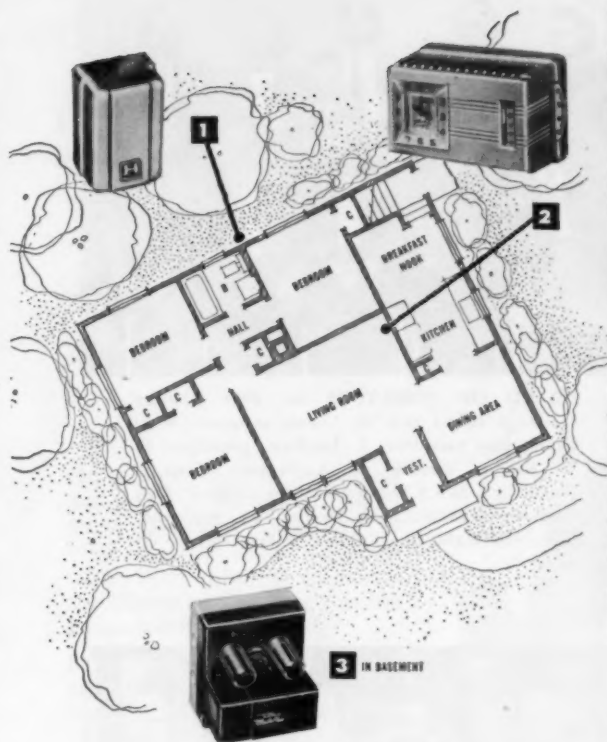
“Electronic Moduflow is opening a lot of eyes to home comfort! It’s certainly boomed our sales—to builders and individual customers, too. That outdoor thermostat makes a lot of sense, and it’s a terrific sales tool.

“An electronic *outdoor* thermostat interests prospects right away, because it’s so unusual. Just explain how it works with the other electronic units in the system... how it keeps indoor temperatures *automatically* tuned to the weather outside, to maintain *constant* comfort.

“This is a sales story you’ll relish! It opens up a whole new era in home comfort. It does away completely with irritating overheating and underheating, and provides smooth, luxuriant comfort.

“And Moduflow is easy to install and service—it’s ideal for any home with an adequate heating plant. We get a big kick out of selling Honeywell Electronic Moduflow! And *you* can, too!”

Electronic Moduflow is also available in a year-round model—to control the central cooling plant in the summer.



### How Electronic Moduflow Works

The Electronic Weathercaster (1), mounted outside the house, senses the outdoor temperature and by means of electronic signals continually tells the Electronic Clock Thermostat (2) what indoor temperature is required to maintain comfort. This Electronic Clock Thermostat, mounted in the living room, signals the Relay Amplifier (3) which automatically tells the heating or cooling plant to provide the amount of adjustment required to keep the house at the right temperature—no matter how changeable the weather might be.

### LIFE MAGAZINE ADVERTISING CAMPAIGN HELPS PRE-SELL YOUR PROSPECTS

Honeywell is using an extensive national advertising program—13 spreads in LIFE Magazine—to help create demand for Moduflow. In addition, literature, displays and other material are available.

# MINNEAPOLIS Honeywell



## Electronic Moduflow

112 OFFICES ACROSS THE NATION

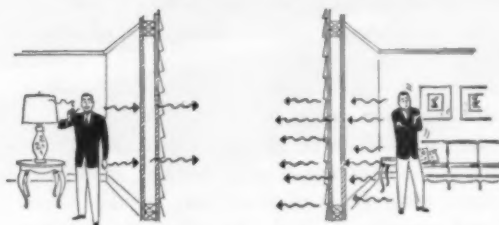
AMERICAN ARTISAN, APRIL 1954



### "Cold wall" problem solved by Moduflow

With a chilly outside temperature, occupants feel comfortable when indoor temperature is 71°. But as it gets colder outside, heat loss increases, so *higher* indoor temperature is needed to compensate for colder walls. Electronic Moduflow does this *automatically* by raising control point of indoor thermostat so more heat is supplied.

### Moduflow provides more comfort by varying indoor temperatures



### Why people need varying temperatures

Tests show if indoor temperature is merely held constant when outdoor temperature falls, a person inside *feels* uncomfortable. As the walls of the room become colder, they "draw" increasing amounts of heat from the body.

MINNEAPOLIS-HONEYWELL REGULATOR CO.

Dept. AA-4-85, Minneapolis 8, Minnesota

Gentlemen: Please have your representative show me your "Dealer Profit" program for Electronic Moduflow.

Name.....

Firm Name.....

Address.....

City..... Zone..... State.....

## THE BEST IN PRODUCTS —

(Continued from page 107)

rected at the third group to move them "over the borderline" into the first two categories where they will be more directly in the market for new equipment.

As to the modernization market, Mr. Nunlist emphasized that here heating equipment is in direct competition with other equipment offered for home modernization — new kitchen equipment, new furniture, etc. To compete in this class, the dealer must emphasize the new features available — describing them and pointing out why they represent more safety, comfort, etc. "For example," he said, "don't neglect to tell your customers about even small details. The installation of such a simple thing as dampers becomes a sales feature, since they serve a useful purpose for the customer. Also, give reasons — explain, for instance, why you'd use aluminum or galvanized duct in a particular application. Be sure to give the brand name of the furnace and accessories and emphasize both new features and reliability."

Stressing that a systematic approach to selling is the best, Mr. Nunlist divided selling techniques (to be used for all three types of prospects) into three groups:

Pre-selling techniques.

Closing-the-sale techniques.

Post-closing techniques.

### Make the Most of Pre-Selling Aids

In the first group are all the devices for getting customers "in the mood to buy." Mr. Nunlist mentioned such advertising methods as direct mail; door-to-door canvassing; newspaper, radio and telephone directory advertising; and signs. He used a film on the history and development of signs as a pre-selling aid to emphasize that signs should perform four main functions:

Inform — tell what you sell.

Instruct — give details on the functions of the product.

Identify — tell who sells it.

Advertise — associate the product with a well known theme or some outstanding comfort feature.

Like signs, other types of advertising should inform, instruct and identify, he said. In telling the prospect about heating or cooling equipment, a newspaper advertisement should be reasonably specific. It should tell the customer not only that a given piece of equipment is available at a stated price, but also that this equipment includes specific operating features which will provide customer benefits.

"The dealer should make absolutely certain that the customer knows exactly what he is buying," Mr. Nunlist stated.

Newspaper, radio, and direct mail advertising can identify the dealer by associating his name and the firm name with nationally advertised products which ring a bell in the prospect's mind.

In regard to door-to-door canvassing, Mr. Nunlist suggested that dealers advertise in newspaper want ad



BOARD OF DIRECTORS for 1954 includes (seated l. to r.) Wm. C. Lumm, secretary; Wm. Orton, past president; J. Jacobson, president; E. W. Kramer, director; D. A. Mannen, director; (standing l. to r.) Vance Heymann, director; Don Dieterle, treasurer; Leo Budde, vice president; Allen McKnight, director; and Robert Spragg, director



CONVENTION PROGRAM COMMITTEE talking over last minute scheduling includes (l. to r.) Allen McKnight, Wm. Orton, W. Ed Bogen and Don Dieterle



LADIES PROGRAM COMMITTEE were (l. to r.) Mrs. J. C. Howell, Mrs. W. Ed Bogen, Mrs. L. A. McKnight (chairman), Mrs. Robert Spragg and Mrs. Wm. Favret



# Engineered to WIN CUSTOMERS

## Delco Motors

Longer, more dependable service wins more customers. And that is the biggest reason why leading manufacturers of heating and ventilating equipment choose Delco motors for oil burners and blowers . . . why smart dealers replace with Delco.

Delco selects materials carefully and builds its motors with painstaking attention to every detail. Delco motors have precise dynamic balance . . . special features such as uniflow pressure-cast rotor conductors, steel backed tin babbitt sleeve bearings, cored oil wells, and varnish-dipped and baked motor windings add extra endurance for long, trouble-free service.

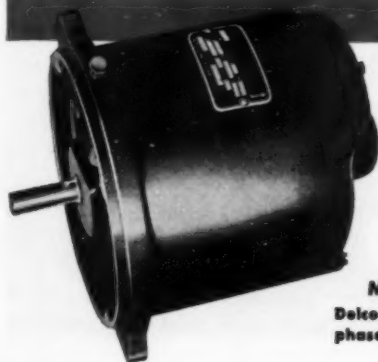
You will find the right motors for your products in the great Delco line. For information on any application, address: Delco Products, Dayton 1, Ohio, or our nearest sales office.



### MOTORS FOR BLOWERS

Delco resilient-mounted motors, split-phase and capacitor-start types, single- and two-speed designs, 1/4- to 3/4-horsepower ratings.

THE BEST RUNNING MATE YOUR PRODUCT CAN HAVE



### MOTORS FOR OIL BURNERS

Delco flange-mounted motors, split-phase, 1/4- to 1/2-horsepower ratings.

## DELCO PRODUCTS

Division of General Motors Corporation • Dayton, Ohio



### SALES OFFICES:

ATLANTA • CHICAGO • CINCINNATI • CLEVELAND  
DALLAS • DETROIT • HARTFORD • PHILADELPHIA  
ST. LOUIS • SAN FRANCISCO

sections for part time salesmen to do this work on a commission basis. He also suggested coordinating this type of program with church and other group activities under an arrangement by which the commissions of members working with the dealer would go into whatever club funds the members were building up.

He stressed that in newspaper and direct mail advertising, testimonials are useful, emphasizing that visual aids and hand-out literature should also be used.

"Advertising should be regular," he said. "A small ad run consistently probably will get more results than larger, more sporadic, ads."

A reasonable amount of the profits of the company should be allotted to advertising, he said, giving as a minimum figure 1 per cent of sales volume.

As to the post-sales phase — he stressed the importance of having customers who are "already sold" perform advertising functions for the dealer. Mr. Nunlist suggested such devices as offering prizes for sales made by customers. He stressed the importance of providing good servicing to customers who have bought equipment, since these customers will then "talk up" the company. He suggested that the dealer make a post-sales visit to the customer to discuss cleaning schedules for filters, adjustments which the home owner can make, and the availability of regular maintenance service. Mr. Nunlist also stressed that every member of the staff should be a "salesman, who 'talks up' the company."

Mr. Nunlist then turned to the second major point — having good products and services to sell. He pointed out, "It is almost impossible to sell a product about which you are ignorant or one which is behind-the-times." Dealers must keep up with new developments and use all the techniques made available, he stated.

In the light of this, a series of slide films was shown, explaining in detail each part of the refrigeration system, how it performs, and covering driers, expansion valves, low pressure liquid and vapor, superheat, compressor, cooling coils, condensing processes, high pressure vapor, oil for lubrication (moisture free requirements), liquid distributor at entrance to cooling coil, and bypass dampers for controlling air flow over the cooling coil to secure the required degree of moisture removal.

### Market Increasing for Home Cooling

The potential market for air conditioning was further analyzed by L. H. Hirschbach, General Electric Co., in his address on cooling and air conditioning as applied in residences. He quoted various national magazines to show that the market is changing — that an annual income of \$4000 to \$7500 now represents 75 per cent of American families and that these families are increasing in size and need more living space. He cited as typical the attitude that "nothing is too good for our home and our kids." Air conditioning is wanted, Mr. Hirschbach said, because people realize they work, play and round

out their daily living cycle in the home. He predicted that in five years, 2 million homes will be completely air conditioned, and quoted consumer research surveys which indicated that of those eligible home owners interviewed in the \$2000 to \$5000 income bracket, 55 per cent said they wanted residential air conditioning now; of those in the higher income bracket, 41 per cent want it now.

Mr. Hirschbach pointed out that 30 million homes over 20 years old are now in the market for air conditioning. Like Mr. Nunlist, he stressed that the prospective customers in this modernization market are willing to buy — but first they must be shown — through advertising.

### Offers Cooling Pointers

Also stressing the need for dealers to offer the best in equipment and service, Mr. Hirschbach pointed out that each job should be completely engineered for proper equipment selection. Dealers should use all the available published material as guides, he said.

Adding some specific pointers, he stated that dealers should take nothing "for granted" in duct design and air distribution for the modernization market. Each outlet should be checked for volume and velocity, and all registers or diffusers should be selected according to the most up-to-date methods and practices.

All ducts must be insulated where exposed to any unconditioned areas, he said. Also, the economics of local water supply must be considered, with attention paid to the probable abundance of future supply.

He cited comparative operating costs for tested systems in one area as \$80 a month for a unit requiring water and electricity, \$55 a month for an air cooled job (representing the cost of electricity alone). Continuing with the comparison, he stated that a 3 hp water cooled conditioner with 70 F water will give 3 tons of cooling, while a 3 hp air cooled unit cannot give 3 tons at 95 F air. It usually would provide something slightly more than 2 tons. He concluded by stressing the importance of selecting equipment on the basis of the specific requirements of each application.

### Will Water Supply Limit Sales?

Elaborating on the water supply factor as it affects air conditioning, Robert C. Smith, chief geologist, Ohio Division of Water, pointed out that though there had been shortages — in Ohio at least — these could be reduced by certain measures.

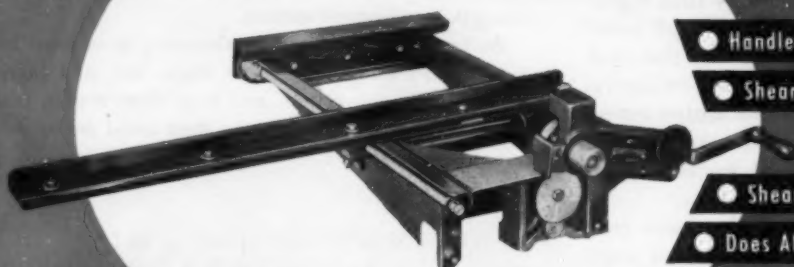
In 1953, 50 towns in Ohio were on the critical list in terms of water supply because of increase in population and in the amount used per home. Each person uses 150 gal per day, and industry uses 1200 gal per person per day, he said.

To meet its water needs, Ohio has two sources: ground water and surface water — both related to rain and

# THE **LOCKFORMER**

## SLITTING ATTACHMENT

**your best equipment "buy"  
since the Lockformer itself!**



- Handles up to 20 gauge material
- Shears any length . . . 1" to infinity
- Shears any width . . . 1/8" to 24"
- Does ANY shearing job on 48" sheets

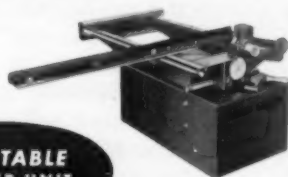
**COMPLETE • Ready-to-install • only \$150.00\***

Install the Lockformer Slitting Attachment in only 10 minutes on your Lockformer Model 20, 22 or 24 without special tools. It shears 30' to 35' per minute with a tolerance of only 1/32" on 8" sheets. Doesn't interfere with either built-in Pittsburgh or auxiliary rolls . . . is readily portable for "on-the-job" use . . . has minimum sharpening expense. May be purchased separately; with Lockformer Model 20, 22 or 24; or with special Power Unit described below.



**SLITTING ATTACHMENT ON  
THE LOCKFORMER "22"**  
(Also available for Lockformer "24")

### SLITTING ATTACHMENT ON SPECIAL POWER UNIT



**PORTABLE  
POWER UNIT**

**Ready for Slitter . . . . . only \$98.75\***

Easily carried to the job . . . saves mounting and dismantling of Slitter on Lockformer when Power Flanger Attachment is also used. Completely equipped with 1/4 hp., ball bearing, capacitor type motor, cord and on/off switch. Power Unit with Slitter complete (as shown) . . . . . \$248.75\*

\* Prices quoted F. O. B. Factory — subject to change without notice

**WRITE FOR CATALOG TODAY**

# THE **LOCKFORMER** CO.

4615 WEST ROOSEVELT ROAD

● CHICAGO 50, ILLINOIS

the geology of the area. Nature uses 75 per cent of the rainfall, however, leaving only 25 per cent for human beings, he said.

Shortages can be reduced by increasing water rates to pay for going deeper or further distances to natural surface reservoirs, he said, stating that air conditioning units can "certainly be sold even where shortages may exist, providing steps are taken to secure the supply for the years ahead," he concluded.

### Small Duct Systems — Big Possibilities

The advantages of small duct systems and the careful engineering they require were discussed by Herb Hayes, Armstrong Furnace Co., in his speech on small round duct systems and new trends. He pointed out that small duct systems fit the requirements of the modernization market because small round duct can be used to extend ductwork into areas that may be difficult to reach with conventional rectangular ductwork and the accompanying fittings.

Mr. Hayes feels perimeter heating is the system most appropriate for small round duct (because of low outlet velocities, etc.).

He described a number of advantages of perimeter heating, pointing out that with such a system it is not necessary to adjust the direction of air flow, as in the case of registers located on inside walls (either high or low); it is easy to avoid excessive air motion, which results in drafts; and it is possible to maintain more even air temperatures throughout the room by placing heat at the points of greatest heat loss.

He also stressed that small duct perimeter systems require careful engineering so that they will fit exactly the requirements of the buildings in which they are used. "No longer can we use the safety factors that existed with conventional high or low wall systems," he said. "There are few liberties that can be taken at the time a small duct perimeter system is engineered."

Continuing with specific recommendations, he said, "It is essential that a maximum static pressure of 0.02 in. be used in engineering these systems because the furnaces sold today are designed to deliver their rated volume of air at 0.02 in. or less."

It is extremely important to match exactly the heat loss of the building with the rated output of the furnace, he added. This means the dealer who "really wants to sell" can educate himself to perform a top notch engineering job and can be sure of offering customers the most economical installations because he will not be oversizing equipment. Mr. Hayes stressed that only with correctly sized equipment can the other requirements of small duct systems be met.

### Joining Copper Sheets for Roofing

G. J. Gamber, Revere Copper and Brass Co., discussed sheet copper and its application in construction.

He used a film to explain how copper sheets behave under stress due to expansion and contraction, pointing out that failures seem to be more frequent with light gage, soft copper than heavy gage cold rolled sheet copper. He described how copper sheets on a metal roof might be installed to get the best results. Seams at end joints, he said, should possess strength equal to that of the sheets themselves. In gutter linings of heavy copper having greater strength than a good soldered seam, the sheets should be riveted together to develop proper joint efficiency.

It was pointed out that edges on both sides of sheets to be locked and soldered together should be pre-tinned with solder before the locks are formed, insuring enough strength to withstand stresses.

According to the movie, laboratory tests have been made to determine the correct shape, size, and gage of copper to use for gutters, and from these results, tables have been made up to help the sheet metal dealer determine where and how to locate expansion joints.

### To Whom Should You Extend Credit?

One of the speeches on correct business practices was given by M. J. Calvert, Dun & Bradstreet, Inc., who told members about the "3 C's of credit extension" — *character* of the individual or business, *capacity* to pay, and adequacy of *capital*. He pointed out that his suggestions related in the main to contractors doing work for commercial and industrial concerns rather than individuals and to building contractors.

Mr. Calvert feels that "since the war boom has died down" too much credit has been granted without enough information about the borrower. (There was a 16 per cent increase in business failure in 1953, with a 40 per cent increase in liabilities for the same period.)

To be able to pay its bills, a company must learn to meet competition and still retain a fair per cent of the profit for a fund to procure new business. The total debt of a business should not be more than 50 per cent of its net worth, and accounts payable should not be more than 1/12 of the annual sales. Half of the gross profit should equal the cash balance and both should be balanced against each other so that a deficiency in one is offset by a surplus in the other. Companies who meet these qualifications probably have the ability to pay their bills, he stated.

### Collections Require Careful Records

As to collections, Mr. Calvert said that the contractor must know his customer — must find out, for example, why a change is made in the manner of payment. (A company might usually pay to take advantage of discounts but change to paying in 30 or 60 days.) The contractor should not hesitate to ask for payments when they are due, and he should use a system to review all

(Please turn to page 152)

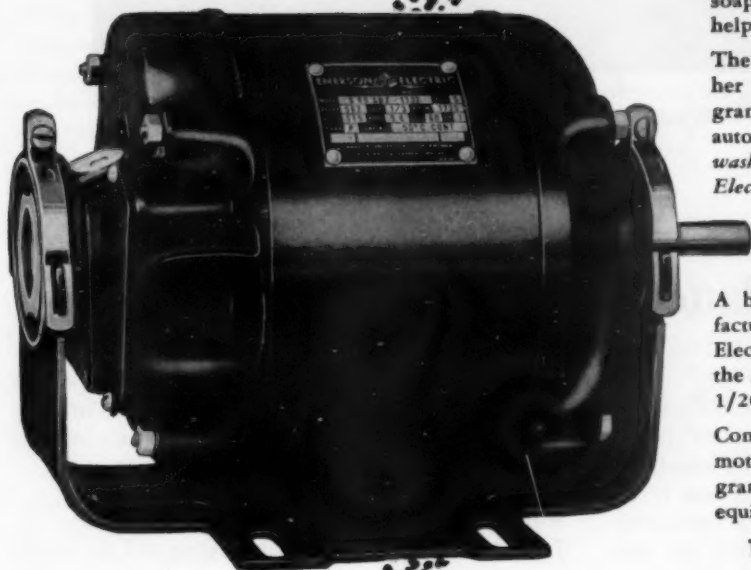




## clothes come clean ... at home

"Cleaner!" "Whiter!" "Quicker!" Those sprightly soap jingles would be meaningless, without the help of the modern washing machine!

The greatest compliment a housewife pays her washing machine is that she takes it for granted. She pushes a button... it operates automatically. *On many of America's best known washers and driers that button starts an Emerson-Electric motor.*



A background of 63 years of motor manufacturing experience stands behind Emerson-Electric motor design and production, offering the right motor for every job, in ratings from 1/20 to 5 h.p., or hermetic motors 1/8 to 20 h.p.

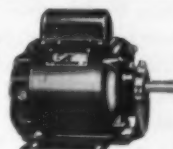
Consider the advantages of Emerson-Electric motors when planning your long-range program for top-flight leadership ratings on your equipment.

**THE EMERSON ELECTRIC MFG. CO.**

St. Louis 21, Mo.

### EMERSON-ELECTRIC MOTORS

**For Belted Fans  
and Blowers**



These motors incorporate all the electrical and mechanical specifications best suited for this service. Split-phase motors, available in 1/8, 1/4 and 1/3 h.p., with resilient mountings and automatic reset thermal protectors. For complete data write for Motor Bulletin No. 494.

**EMERSON**  
MOTORS • FANS



**ELECTRIC**  
APPLIANCES

# WHAT THE ASSOCIATIONS ARE DOING



BASIC PROBLEMS in heating and air conditioning were considered by students at the Toronto Indoor Comfort school. One of the most popular of the chapter's schools held this year, it was attended by 59 heating men

## Good Attendance at Canadian Schools

THE CANADIAN CHAPTER of the National Warm Air Heating and Air Conditioning Association reports an attendance of 29 at the Kitchener Indoor Comfort school, 59 at Toronto, 63 at Vancouver, 53 at Calgary and 77 at Saskatoon. One of the subjects discussed at the classes was the problem of heat loss. Students were told that the type of building material used in a structure and its tightness of construction were important factors in estimating heat loads. Excessive infiltration of outside air, it was pointed out, increases the heating load and makes it difficult to maintain a good degree of relative humidity. Also considered was the problem of heat loss from basement areas.

In a recent news letter addressed to its members, the chapter urges dealers to capitalize on the advantages of having NWAHACA releases published in their local newspapers and suggests that they tie in their advertising with these releases. The letter outlines a procedure members might follow for getting the releases printed: "1) Explain to your local editor that you have a release service on heating which you feel contains information of interest to his readers; 2) point out that the material is published by NWAHACA, which is nationally recognized as the scientific research authority in the field of warm air heating; and 3) emphasize that there are no trade name products promoted and that there are no sales pro-

motion gimmicks in the releases. Tell him that they constitute facts about warm air heating systems which are for the consumer's education."

### Minneapolis Association Reorganizes

THE MINNEAPOLIS Sheet Metal, Heating and Air Conditioning Association has been reorganized and is now operating under the name of the Minneapolis Sheet Metal and Roofing Employers Association. Objective of the new organization is to improve conditions in the ventilating, air conditioning, warm air heating, air handling, sheet metal and roofing industries. Howard D. Camitsch has been retained as executive secretary, with offices located at 6 E. Lake St., Minneapolis. Mr. Camitsch was formerly with the Department of Procurement, U. S. Air Force, and has also been an instructor in the air conditioning department of Dunwoody Institute.

In order to provide for the development of specialized programs for various phases of the industry, the association is subdivided into five sections: the commercial air conditioning division, under the chairmanship of John Siegel; domestic air conditioning, with George Sedgwick as chairman; general sheet metal, Ray Kraus; roofing, Carl Johnson; and manufacturing, Leon Larson. The chairman of each section was elected to serve on the board of directors. Newly elected officers of the associa-

tion are: Thomas F. Burniece, Jr., president; Richard Knowles, vice president; Bernard L. Dalsin, treasurer; and Richard Seelye, secretary.

### **RTA Elects New Officers**

L. L. CARTER was elected president of the Refrigeration Trade Association of America at the association's second annual convention, held recently in Richmond, Va. Other officers elected are R. H. Packett, first vice president; J. B. Broughton, second vice president; Leo Wolff, treasurer; and Ray L. Dillard, secretary. The new officers will take office on July 1.

### **New Chairman for Georgia Committee**

I. C. MOCK, president, the Roofing and Sheet Metal Contractors Association of Georgia, has appointed Charles W. Bryan, Jr., as chairman of the membership committee, to succeed B. L. Noblitt. Mr. Noblitt resigned as chairman in order to be free to devote more time to his duties as executive secretary of the association. In accepting his resignation, President Mock praised the work of the membership committee, stating that under Mr. Noblitt's chairmanship it has recruited 15 new members.

### **Warm Air Golfers to Play**

THE FIRST golfing outing of The Chicago Warm Air Golfing Association has been planned for Thursday, May 13. It will be held at the Midlothian Country Club. Other outings will be on July 27 and September 28.

### **Marc Bluth Speaks at Stoker Meeting**

THE ANNUAL MEETING of the Midwest Stoker Association, an organization of Chicago stoker distributors and factory branches, was held at the Builders Club in Chicago. Guest speaker was Marc G. Bluth, field representative of the National Coal Association, who discussed the NCA sales-engineering council program he is directing in the Chicago territory, Indiana and Michigan.

Officers elected for the ensuing year are president, John J. Hayes; vice president, E. M. May; and secretary-treasurer, F. H. Herndon.

### **Illinois Group Gets Hospitalization Plan**

THE INSURANCE COMMITTEE of the Sheet Metal Contractors Association of Illinois reports that a hospitalization plan which members may offer to their employees is now available through the association. Under the program, "off the job" protection is offered to employees and their families as well as to the sheet metal contractor himself. Complete information may be obtained by writing to the association's secretary, E. A. Schmidt, 1210 E. Laurel, Springfield, Ill.

Jay Harms has been appointed by the directors of the association to conduct the state apprenticeship contest, results of which will be announced at the state convention, scheduled to be held April 20-22.

### **Coming Events**

April 20-22 — Sheet Metal Contractors Association of Illinois, Inc., Annual Convention. Abraham Lincoln Hotel, Springfield. E. A. Schmidt, Secretary, 1210 E. Laurel St., Springfield.

April 22-23 — Denver Indoor Comfort Conference. J. H. Singleton, Chairman, 1830 Market St., Denver 2.

April 30-May 1 — Roofing and Sheet Metal Contractors Association of Florida, Annual Convention. Monte Carlo Hotel, Miami Beach. Robert Raymond, Secretary, P. O. Box 6331, Coral Gables, Fla.

May 3-6 — Air Pollution Control Association, Annual Meeting. Patten Hotel, Chattanooga. Harry C. Ballman, Executive Secretary, 4400 5th Ave., Pittsburgh 13.

May 10-12 — Sheet Metal Contractors National Association, 11th Annual Convention. William Penn Hotel, Pittsburgh. J. D. Wilder, Executive Secretary, 170 Division St., Elgin, Ill.

May 16-20 — Oil Heat Exposition (The National Indoor Comfort Exposition) sponsored by Oil-Heat Institute, Commercial Museum, Philadelphia. R. H. L. Becker, Managing Director, 500 5th Ave., New York 36.

May 23-25 — National Heating Wholesalers Association, Inc., Spring Convention. New Ocean House, Swampscott, Mass. Stuart Rambo, Secretary, Suite 921 Builders Bldg., 228 N. LaSalle St., Chicago 1.

June 10-12 — Roofing and Sheet Metal Contractors Association of Georgia, Annual Convention. General Oglethorpe Hotel, Savannah, Ga. B. L. Noblitt, Secretary, P. O. Box 1196, Augusta.

June 17-20 — Carolinas Roofing and Sheet Metal Contractors Association, Annual Convention. Grove Park Inn, Asheville, N. C. W. H. Arthur, Jr., Chairman, 225 Patton, Asheville.

June 28-30 — American Society of Heating and Ventilating Engineers, Semi-Annual Meeting. New Ocean House, Swampscott, Mass. A. V. Hutchinson, Secretary, 62 Worth St., New York 13.

Jan. 24-28 — International Heating and Ventilating Exposition (The Air Conditioning Exposition). Commercial Museum, Philadelphia. Charles F. Roth, Manager, International Exposition Co., 480 Lexington Ave., New York 17.

**CONVINCING!**

Millions will see these full-page ads in *The Saturday Evening Post* and other leading national magazines in May and June—right when homeowners are in a buying frame of mind.

Now... cool, cool summer comfort  
throughout your entire home  
with this

**NOW...one single unit**  
that cools your entire home!

Comfort all night thru

Perfect relaxation

*Like dining out*

*Work in a cool kitchen*

The children stay healthy  
happily.

thing

**SUNBEAM Summer Air Conditioners**  
by American-Standard

**SALES  
COMPELLING!**

Aimed directly at those homeowners who have forced warm air heating, these ads present sales compelling reasons for choosing Sunbeam Summer Air Conditioners to do a *complete home cooling job with one single unit.*



**AMERICAN-Standard**  
**SUNBEAM**  
 SUMMER AIR CONDITIONERS

AMERICAN BROTHERS • CROOKS STATE & HALL BLDG. • NEW YORK, N.Y.

Agents: American, Stevens, Squibb & Co. • 100 WALL ST. • NEW YORK, N.Y.

**2025 COUPON FOR HOME SOCIETY**

[illegible]

Surveys Home and industry: 6002015 & 11000000

Advertisement prepared by Gordon, Gordon, Sundt & Gilson, Inc., Pgh. to appear in  
 Advertising business pages - May & 1960  
 R. G. G. Pgh. 4-24-60



# **BARRELED PROMOTION**

## **makes YOU the man to see for Central System Cooling**

**T**HE trend in residential summer air conditioning has swung sharply to the central system which provides comfort cooling throughout the entire home from one single unit.

And the Sunbeam Air Conditioner Division of American-Standard is all set to help you make the most of it!

We're ready with the industry's finest, broadest line of factory-assembled, self-contained units. And we're telling homeowners about these new and bet-

ter Sunbeam Summer Air Conditioners through a terrific double-barreled advertising campaign which includes national magazine ads, co-op ads you can use in your local newspapers, and direct mail material imprinted with your name and address.

Keyed to the theme "One Single Unit," this hard-hitting promotion offers sound reasons why homeowners should invest in a central system air conditioner and cool the entire home, rather than do a partial job in individual rooms.

### **A great summer for YOU and SUNBEAM!**

Yes, American-Standard SUNBEAM shoots the works to help the aggressive independent retailer like yourself corner the residential summer air conditioning market in his community. For nobody is in better position to sell and install central system cooling than the man who is already a skilled warm air heating contractor. That's why readers of the ads shown at the left are told to get more informa-

tion about Sunbeam Summer Air Conditioners from the Sunbeam retailers who are listed in the Yellow Pages of the phone book under "Furnaces" or "Air Conditioning." That's why Sunbeam continues to stick with the warm air heating man as the best qualified retail outlet for all winter and summer air conditioning products. You're our man! And this is a great opportunity for us both!

#### **ACTION-COMPELLING ADS FOR YOUR LOCAL NEWSPAPER**

plus

#### **SPECIAL DIRECT MAIL PACKAGE**



When you sell Sunbeam Summer Air Conditioners you get a full measure of selling aids including special advertising mats you can use in your local newspaper. All you have to do is order them from your Sunbeam distributor.

A special direct mail promotional package, including two imprinted jumbo cards, and a letter to your prospect on stationery imprinted with your name and address can be ordered through your Sunbeam distributor.

**SEE, CALL or WIRE** your nearest SUNBEAM distributor for detailed information about this special summer cooling promotion. You'll find him listed in the Yellow Pages of your telephone directory. You've still got time, before "hot weather" arrives, to line up your summer cooling prospects if you hurry! **Sunbeam Air Conditioner Division, American Radiator & Standard Sanitary Corporation, Elyria, Ohio.**



**AMERICAN-Standard**  
**SUNBEAM AIR CONDITIONER DIVISION**  
ELYRIA, OHIO.

Executive Offices: Bessemer Building, Pittsburgh 22, Pennsylvania

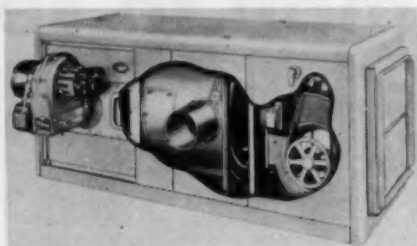
Serving home and industry: AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILE • DETROIT CONTROLS • KENAMER DRILLERS • ROSS EXCHANGERS • SUNBEAM AIR CONDITIONERS

# EQUIPMENT DEVELOPMENTS

The latest information on manufacturers' developments is presented here with brief summaries of the applications of these products. For new literature giving product information which is available, see page 168.

## Oil Fired Horizontal Winter Conditioner

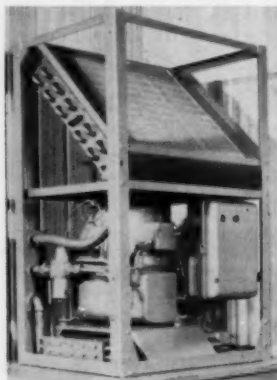
MODEL 532 oil fired horizontal winter air conditioner designed for installation in any convenient floor space or suspended from ceiling joists — Thatcher Furnace



Co., Centre St., Garwood, N.J. Factory assembled, it is available in three sizes — 82,500, 115,000 and 165,000 Btu at the bonnet. It is designed for use in small houses as well as commercial applications such as small shops, stores, service stations, etc.

## Central Air Conditioning Assemblies

DIRECT EXPANSION central cooling assemblies, in vertical (illustrated) and horizontal models, and water chiller systems — Primor Products, Inc., 2011 W. Beecher Rd., Adrian, Mich. All three types, available in 2 and 3 hp



ratings, are furnished without cabinets (though cabinet is optional for the horizontal unit). Models have been designed for use with all types of warm air furnaces or for use independently as space coolers. They are hermetically sealed and available for single and three phase current. The condensers are water cooled, cleanable, and a service drain connection is provided.

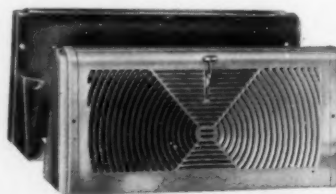
## Spray Assembly for Evaporative Coolers

SERIES 53 "AQUASPAE" water distributing and recirculating assembly now supplied as standard in air wash-

er type evaporative cooling units of 7000 cfm capacity and larger — Alton Mfg. Co., 1112 Ross Ave., Dallas 2. A 1/3 hp, 110 volt, single phase motor is incorporated. It has permanently lubricated ball bearings, totally enclosed construction, all windings dipped for greater moisture resistance. The motor is housed in a waterproof box having large openings in the bottom to permit quick drainage in the event of heavy rains, windstorms, floods, etc. A brass wheel and hub recirculate and spray water to cooling pads.

## Arc Welder

"UTILITY REDI-ARC" a-c arc welder designed to be low in cost and to meet the needs of shops that do not require "production-type" capacity — Marquette Mfg. Co., Inc., 307 E. Hennepin Ave., Minneapolis 14. It handles up to 5/32 in. electrodes and can be used wherever 220 volt, 60 cycle, single phase current is available. It has an extremely high usable capacity possible for a unit of its size and rating, yet input demand is within the limits of a regular 3 kva tube transformer, the company states.



Diffuser



Welder

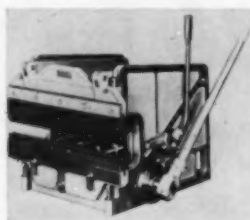
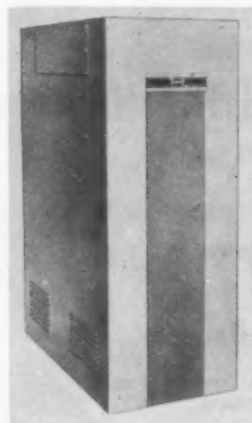
## Baseboard Diffusers and Damper

THREE NEW MODELS in "Diffusaire" baseboard type diffusers for perimeter heating or cooling and a new damper for use with this line — Hart & Cooley Mfg. Co., 500 E. 8th St., Holland, Mich. The No. 44 series diffuser is designed for continuous baseboard installations of 8 ft lengths or more in multiples of 2 or 4 ft units; it has very low resistance and is simple to install, the company states. The No. 405 out-of-wall baseboard diffuser (illustrated) is equipped with a back panel and is connected to a 2 1/4 x 12 in. boot. The damper is equipped with a volume adjusting screw for balancing. This model is designed for installation in many types of old construction as well as new. The No. 452 high capacity 2 ft baseboard diffuser has the same cfm capacity as the company's No. 401 sidewall diffuser (in size 10 x 6) or 8 ft of the continuous baseboard diffuser. The high vertical throw makes it suitable for cooling as well as heating. No cutting is necessary. Parts snap together and

no screws are required. The new damper, No. 44V, is available in only one size, and can be used with either a  $2\frac{1}{4} \times 12$  in. or  $2\frac{1}{4} \times 14$  in. boot. It is partially assembled at the factory.

#### Hand Operated Press Brake

NEW 24 IN. hand operated "Di-Acro" press brake rated at 8 ton capacity — O'Neil-Irwin Mfg. Co., 501 8th Ave., Lake City, Minn. It incorporates a special cam lever mechanism which provides ample power for forming, blanking, piercing, drawing and trimming operations, plus a ratchet drive system that multiplies the power for heavy forming jobs, the company states. Primarily designed to relieve large production models of short run forming operations, the machine can be quickly set up. It will form 16 gage mild sheet steel across the full 24 in. forming width, 10 gage mild sheet steel across a 12 in. forming width as well as inconel, brass, aluminum, stainless steel, chrome molybdenum and all other ductile materials. Throat depth is 6 in. and stroke of ram, 2 in. The brake is available with a complete line of standard and special dies.



Above: Press Brake

Left: Cooling Unit

#### Gas Cooling Unit for Use with Furnace

DIRECT FIRED gas cooling unit that can be connected to existing forced warm air gas furnaces for year 'round comfort — Servel Inc., 119 Morton Ave., Evansville 20, Ind. Capacity is 2 tons, and the unit requires 8.7 sq ft of floor space, being narrow enough to go through a 30 in. door. The refrigeration system in the cooling unit is of the absorption type.

#### Membrane for Use over Subfill and Crawl Spaces

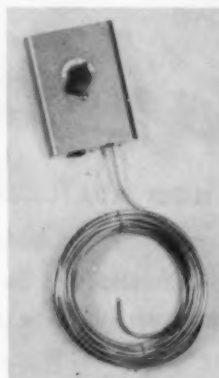
NO. 65 FUNGI RESISTANT membrane for use in slab on ground construction and for use over crawl spaces where the slab is not poured on the ground — The Richkraft Co., 510 N. Dearborn St., Chicago 10. Kraft liners are pre-treated with a special fungicide before being combined into the final product. (Test fungi were in accordance with HHFA's housing research series.)

Edgestring reinforcement is designed to prevent rips and tears. Tensile strengths are 130 lb, machine di-

rection; 56 lb, cross machine direction; and 180 lb, Mullen test. The membrane is available in rolls 36 and 48 in. wide — 432 sq ft; 60, 72, 84 and 96 in. wide, 1000 sq ft each. For application, material is lapped 6 in. and the laps are sealed with a high quality roofing cement applied with a three knot brush. The material weighs about 14.5 lb per 100 sq ft. It has been FHA accepted, according to the manufacturer.

#### Dehumidifier

DEHUMIDIFIER designed to remove up to 24 pints of water from the air in 24 hours depending on atmospheric conditions — Mueller Climatrol Div., Worthington Corp., 2005 W. Oklahoma, Milwaukee. It pulls in moisture-laden air from all directions at the bottom of the unit and dispels the dry air through a diffuser vent at the top. The horizontal coil arrangement increases the unit's efficiency, the company states. The dehumidifier has a larger reserve capacity; a hermetically sealed 1/6 hp compressor; a sealed, permanently lubricated motor; and casters, for increased mobility.



Regulator



Dehumidifier

#### Heating Regulator for Small Homes

"WEATHER-FLO" heating regulator for small homes, designed to assure indoor temperature changes corresponding with outdoor changes and to equalize warmth from floor to ceiling — Automatic Devices Co., Inc., 714 Hillgrove Ave., Western Springs, Ill. Both outdoor and house temperatures are measured and the burner is operated so that the temperature of the air circulated is raised only enough to offset the resultant heat loss. It requires only about one hour to install on an existing burner or on a new building and saves up to 15 per cent in fuel, the company states.

#### Gas Fired Horizontal Furnace

GAS FIRED horizontal furnace, in input ratings of 60,000, 80,000, 100,000, 120,000 and 140,000 Btu, for installation in attic space, under the floor, in basements or suspended in utility rooms — Williamson Heater Co., 3500 Madison Rd., Cincinnati 9. The fully enclosed controls can be mounted on either side of the cabinet.

(Please turn to page 154)

# MORE POWER IN SMALLER FRAMES

**SAVE  
SPACE**



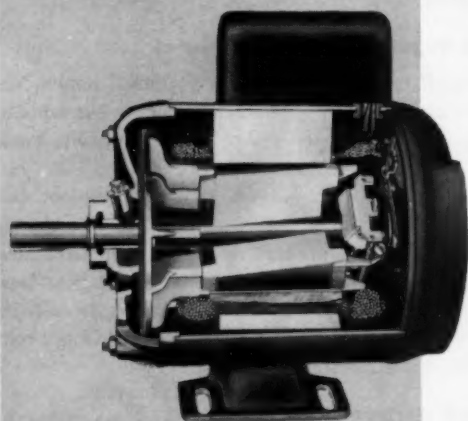
**WEIGH  
LESS**

## NEW *Century* Form "F" Fractional H.P. Motors

NOW AVAILABLE IN  $\frac{1}{8}$  TO  $\frac{3}{4}$  H.P.

Thanks to new techniques developed in the last several years, this *smaller* power package combines improved performance with even greater Century dependability.

### Here's What New Techniques Deliver...



- 1 Better magnetic characteristics for the motor because of more uniform silicon laminated steel in magnetic cores.
- 2 A high dielectric and increased abrasive resistance qualities result from improved plastic insulated wire in the coils.
- 3 Important slot space is saved by improved plastic slot insulation. Extremely tough with higher dielectric resistance.
- 4 Unusual resistance to abrasion, moisture and heat is provided by improved thermal setting plastic varnish insulation on windings.
- 5 Squirrel cage rotors are more uniform because of improved high-pressure die-cast aluminum rotors. Individually, dynamically balanced.
- 6 Increased cooling ability is provided by improved ventilation.
- 7 These new Century Motors incorporate all mechanical features proved effective in thousands of varying applications.

For full details on Century Fractional H. P. Motors—write for bulletin 1-5 Page 1. Century also offers a wide range of types and sizes in AC and DC . . .  $\frac{1}{8}$  to 400 H. P.



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# Controls WARM or COOL FORCED AIR WITH EQUAL EFFICIENCY

NEW 1954  
HIGH EFFICIENCY MODEL

UNBEATABLE LOW PRICE

# TITUS *Perimeter Diffuser*

*Free!*

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PERIMETER DIFFUSER  
CATALOG**

The latest data on design, construction, performance and installation of Titus Perimeter Diffusers.

**INSTALLATION  
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Gentlemen: Please rush me the following FREE information.

- |  |  |
|--|--|
| <input type="checkbox"/> New 1954 Perimeter Diffuser Catalog         | <input type="checkbox"/> Booklet on Trends In Warm Air Heating |
| <input type="checkbox"/> New 6-page Installation Design Manual No. 1 | <input type="checkbox"/> Display Kit Information               |
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American Artisan April, 1954

# TITUS *Better 8 Ways*

- **FOR HEATING AND COOLING**

Low pressure requirements. Cool air easily forced high up wall. Maintains broad pattern for heating. No draft or stagnation areas.

- **LOW COST**

No roughing-in. No callbacks. More complete factory assembly speeds installation. No metal cutting necessary.

- **GREATER FREE AREA**

Lowers pressure requirements. Holds noise to absolute minimum. Permits gentle circulation with no draft.

- **BAFFLES GIVE 180° DIFFUSION**

Directs air where it is most needed. Eliminates turbulence. Control surfaces require less pressure to obtain proper CFM.

- **ONE BOOT AND DAMPER SIZE**

Easy to stock and install. Saves labor. New inconspicuous damper control. No breakable chains.

- **ONLY 2 PARTS**

Back, sides and top are welded together. Simplify installation. Two screws are used to fasten diffuser in place.

- **3 MODELS**

No. 50: 17" in length. No. 100: 30" in length. No. 150: 60" in length. No. 150 consists of 2 No. 100 diffusers joined with clips.

- **NEW STYLING**

Lower, narrower silhouette. Streamlined. Recesses in baseboard. Allows easy drape movement because of tapered ends.



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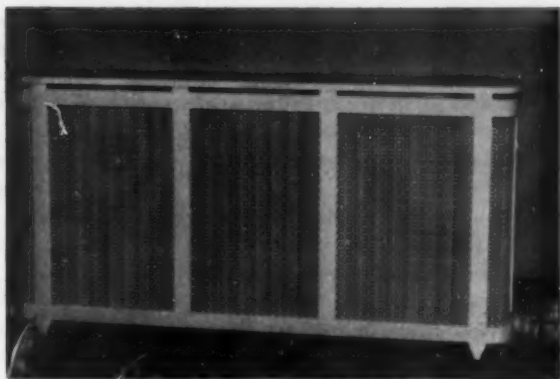
**Waterloo, Iowa**



Remember, not until you have a NEW TITUS PERIMETER DIFFUSER CATALOG and a NEW TITUS MODEL HIGH EFFICIENCY DIFFUSER in your hands, can you see the amazing difference between this model and other baseboard units. Comparison will immediately show the unquestioned superiority of Titus units.

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PROBLEMS WITH  
NEW INSTALLATION  
DESIGN MANUAL**

Mail postage paid postcard today for these most important air diffusion developments of 1954.



**7** "NO JOB IS TOO LARGE OR TOO SMALL" is the motto of this shop, as can be seen from the huge copper roof for the Cathedral of St. Paul, completed by the company (*left*) and the carefully worked out radiator cover (*right*)—a specialty item which is used in the office and shop



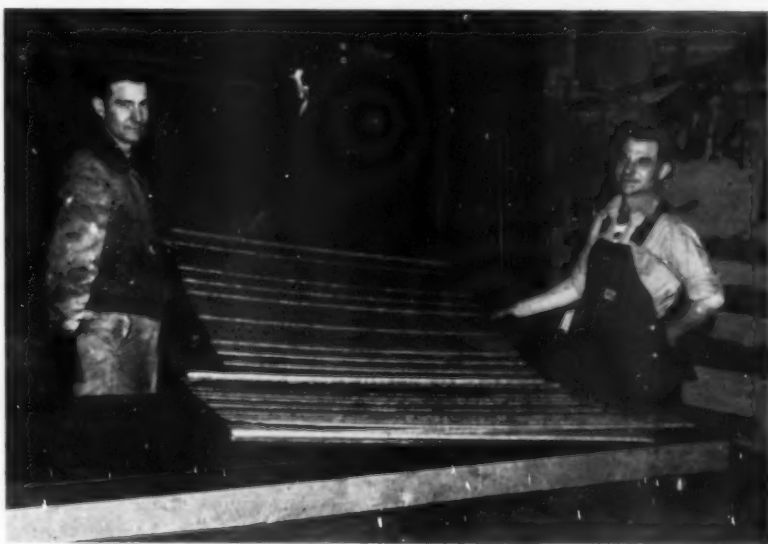
**8** SKILLED MEN AND SPECIAL MACHINES are behind the shop's products. Artisans like Louis Mosner (*left*) who renovated the filing cabinet (Fig. 4) have at their disposal equipment such as this special crimping machine (*right*) operated by James Walsh

## SHOP IS AD —

(Continued from page 63)

### Furniture Remodeled

One of the company's filing cabinets standing near the entrance door was manufactured of wood in 1890, but has been remodeled so that it now has an aluminum-stainless steel covering. The drawer side of this filing cabinet is shown in Fig. 4, the close-up revealing the beauty that skilled sheet metal craftsmen are capable of achieving. Louis Mosner is the artisan responsible for this work. He has been with the firm since 1911, when he arrived in this country from Bohemia (now Czechoslovakia).



**9** UNIQUE PRODUCTS such as these special troughs and gutters shown are a regular part of every day's shop schedule

The embossed aluminum motif is continued throughout the remainder of the office. Fig. 5 shows a 1920 model desk from which the original legs have been removed to be replaced by modernistic supports. The panels of the desk have been covered with embossed aluminum and the trim is stainless steel. At the desk is R. E. Walsh, shown using the Directory Section of the January American Artisan in selecting equipment to fill a contract. One of the large show windows with its attractive metal flower boxes is behind him.

Another example of how outdated furniture can be refurbished is the 1892 typewriter desk (Fig. 6) at which John M. Walsh, office manager of the company, is examining an invoice.

Continuing the use of the office as a showroom for some of the services offered by the company, Mr. Walsh has covered the radiators with a specialty item manufactured in his shop. This radiator enclosure is

made of painted black sheet steel and perforated grille formed to cover the radiator sections. The control valve is in some cases left outside the cover for easy access. Inside the radiator cover is a built-in humidifier pan. The company offers this specialty in both commercial and domestic sizes.

### Many Roofing Jobs

Among the many jobs completed by the company are the copper roof for the Cathedral of St. Paul, the Nazareth Hall of the preparatory seminary, Lowry Hotel and Lowry Medical Arts Building, and many other buildings located in St. Paul, and the vicinity. It also installed one of the first metal roof decks in Minnesota (1923); the metal decking was fabricated in the company's shop and transported to Cooley, Minn., where recent tests indicate that it is still in first-class condition and will last many times the life of the wooden deck originally ordered.

Many of the services offered by

the company are not obtainable in all sheet metal shops because of the special machines required. One of these is the crimping machine (Fig. 8, right) on which a sheet is shown being prepared for the fabricating of a metal fascia by James Walsh, superintendent. Special troughs and gutters are in every day's shop schedule.

Through the years, the Finn company has maintained its reputation for top-notch work because new techniques and tools have been employed consistently.

To keep up to date in technical as well as business management information, and to contribute his own know-how to the industry, R. E. Walsh has actively participated in local, state and national sheet metal associations. He served two terms as president of the Sheet Metal Contractors' National Association, from May 1947 to May 1949, and is the immediate past president of the Sheet Metal & Roofing Contractors' Association of Minnesota.

## CRAWL SPACE HEATING —

(Continued from page 65)

system and insist that a continuous duct should connect the subfloor plenum and the registers. The existing regulations of the National Fire Protection Association are usually cited as the final reference on the matter.

It is most appropriate at this point in the discussion, therefore, to examine the Standards for Air Conditioning Systems, as published in NFPA pamphlet No. 90 of the National Fire Protection Association. The portion of the pamphlet which is of interest is that designated as Part II. Standards for the Installation of Warm Air Heating and Air Conditioning Systems in Residences. The writers have selected those few sections which seem to be related to the problems connected with crawl space plenum arrangements and offer some comments concerning them.

"305. Classification of Systems...

b) Low temperature systems are

those using.....automatically fired warm air furnaces equipped with a fan to circulate the air and with automatic temperature limit controls that cannot be set higher than 200 F."

With a crawl space plenum system, the above provisions must be followed. That is, the limit switch should be set below 200 F. Furthermore, the duct system should be free flowing so that the bonnet air temperature will not exceed 170 F. A free flowing air circulation system can be provided if an ample number of large stub ducts is specified. By setting the cut-in point of the fan switch to a value of the order of 100 F, the bonnet air temperature can be maintained well below 170 F during most of the heating season. In fact, the limiting temperature of 170 F should be reached only during periods of long heat demand.

In the opinion of the authors, an even safer operation can be assured if:

- The burner input rate is adjusted

for the house so that the furnace is not greatly overfired.

- An ample duct system is provided.
- The blower speed is adjusted to provide an air temperature rise through the furnace of only about 80 F instead of the 100 F commonly used.
- The limit switch setting is reduced to about 175 F in place of the 200 F given in the specifications.

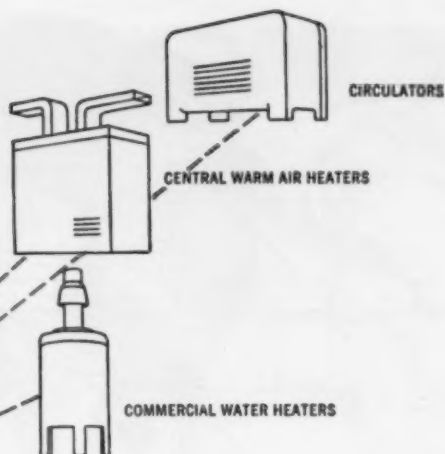
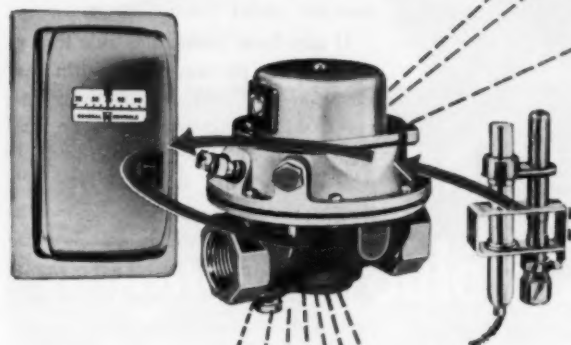
### Stub Duct Provisions

Two more provisions which apply to some extent to crawl space plenum systems and which call for certain stub duct characteristics are:

"315. Portions of such ducts which run in the open, such as those which run approximately horizontal and near the ceiling, shall have clearances as follows provided that portions of such ducts within a distance of 6 ft of the near edge of the furnace measured along the duct



*The* **BEST**  
automatic control system  
for every heating need



For universal control of gas-fired equipment it's General Controls' BX-69 package set, with positive B-60 control valve and a pilot-generator delivering 700 millivolts of electrical energy to operate the system independent of outside electrical power. Silent . . . safe . . . easy to install . . . the BX-69 operates on natural, manufactured, mixed, liquefied petroleum or sour gases. Wide application to gas fired appliances and wide range of fuel gases make the BX-69 the *best* self-generating all gas control system.

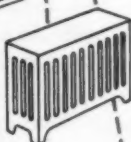


FLOOR FURNACES



GAS RANGE HEATERS

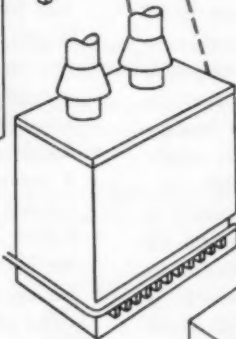
GAS RADIATORS



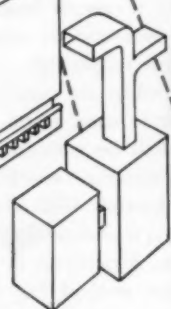
WALL HEATERS



GAS FIRED BOILERS



AIR CONDITIONING UNITS



COMMERCIAL & INDUSTRIAL OVENS

## GENERAL CONTROLS

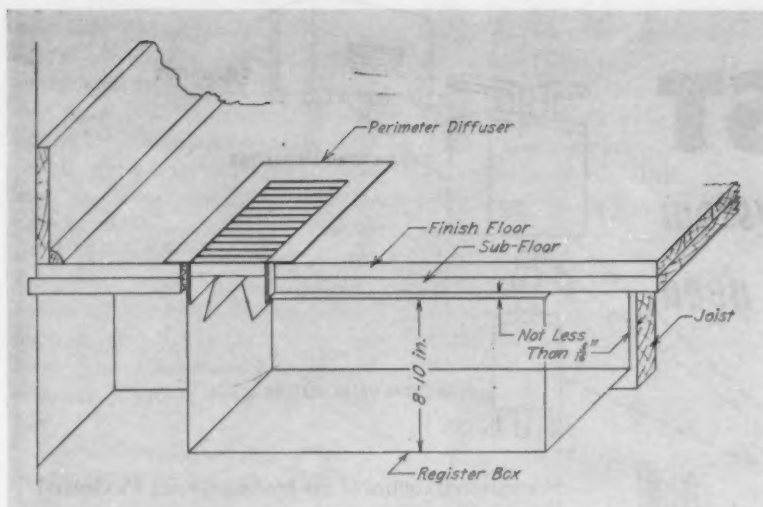
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IF THIS REGISTER BOX is used with crawl space plenum heating systems, dust accumulation can be readily removed by a vacuum cleaner hose after the register face has been lifted

shall have clearances not less than as required above, the furnace bonnet or plenum chamber: a) From metal ducts to combustible material, including wood lath and plaster... not less than 1 in.; b) from metal ducts to metal lath and plaster or other non-combustible finish attached to combustible material... not less than 1 in. ....

"343. Where such ducts enter a floor, partition or enclosure of combustible construction within a horizontal distance of 6 ft from the furnace, they shall be separated from the combustible construction by at least 5/16 in. for a distance of 6 ft from the primary heating surface of the furnace. This space at the point where it enters the floor or partition shall be tightly filled with asbestos cement or other non-combustible insulating material."

In order to fully comply with the above provisions, the stub ducts which discharge air from the subfloor plenum to the crawl space should be:

- Not less than 6 ft long.
- Considerably below the floor joists.
- Pitched downwards so that the warm air is not directed against the floor joists.

These two sections do not specifically cover the case when the duct is omitted from the end of the stub

duct. Some authorities rule that the presence of a duct between the end of the stub duct and the register is implied in these sections. A clarification is needed to cover the special case of the crawl space plenum system.

#### Panels Completely Enclosed?

Some sections on warm air heating panels also might apply to these systems:

"346. A warm air heating panel is a plenum or chamber through which heated air is circulated and of which one or more surfaces are exposed to the space or spaces to be heated.

"347. a) Warm air heating panels shall be used with low temperature systems only. b) Warm air heating panels shall be connected to supply ducts conforming to section 340. ....

"348. Where warm air supply is from a warm air furnace, warm air heating panels shall be enclosed on all sides with material which is wholly non-combustible or which possesses a flame spread classification of not over 20 as determined in accordance with the method for fire hazard classification of building materials of Underwriters' Laboratories, Inc. This enclosing material shall be

securely attached to the building structure; joints and seams shall be substantially airtight. Braces and hangers inside the chamber shall be non-combustible. Interior linings, if used, shall be fire-resistive."

Section 348 most closely approaches the conditions encountered in a crawl space plenum arrangement. It should be kept in mind, however, that when section 348 was written, the crawl space plenum arrangement was not under consideration.

If any local authorities rule that a crawl space plenum falls within the provisions of section 348, and decide that the "panels shall be enclosed on all sides with material which is wholly non-combustible," then a most perplexing dilemma arises. What are the interpretations of the local authorities with regards to basement registers used in connection with a normal basement space with exposed wooden joists? This is a common arrangement that has been in use for more than 20 years and with no difficulties with fire hazards. The question might be logically raised that if a basement register is permissible with a conventional warm air duct arrangement, then so should a warm air crawl space plenum be permissible. This is especially true since the method of design suggested in this article calls for:

- Location of the stub duct at least 12 in. lower than the floor joists, instead of 1 in. as given in section 315.
- Slanting of the stub duct to direct the air downwards towards the ground rather than toward the wood joists.
- Ample air flow to give about 80 F temperature rise through the furnace instead of 100 F.
- Setting of fan switch to cut in the blower at about 100 F.
- Setting of the limit switch to a value of about 175 F.

At this time of writing a clarification of the regulations is being sought. In the next issue, some of the other problems in connection with crawl space plenum systems will be discussed.

poor equipment  
incomplete line  
delayed shipment  
inadequate advertising

price cutting  
installation problems  
management problems  
getting live prospects  
hiring and training salesmen  
ineffective merchandising

## Name Your Toughest Problem...

### TIMKEN Silent Automatic will help you lick it—for good!

Sure, we make the world's finest gas heating equipment, and it's backed by Timken Silent Automatic, the *best-known name in the industry*. But that's not all! Here is the most complete dealer franchise program ever—designed to help solve your toughest problems.

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**Write Today!** Get *all* the facts on a Timken Silent Automatic Dealership. Address R. M. Marberry, Timken Silent Automatic Division, Jackson, Mich.

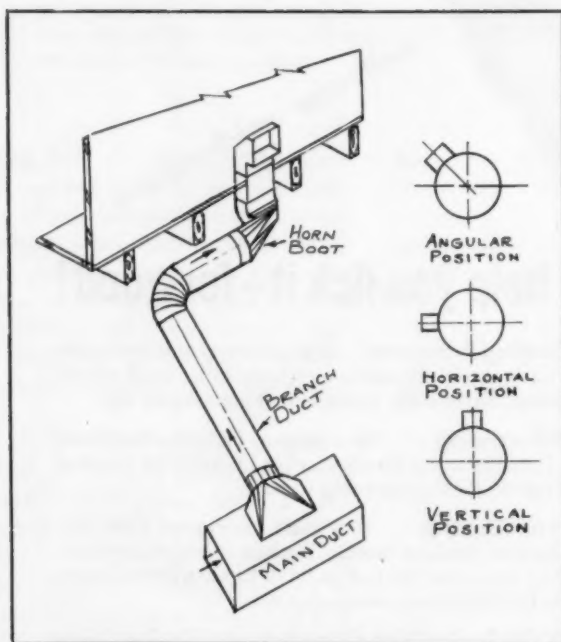


Hi-Furnaces, Lo-Furnaces, Counter-Flo Furnaces,  
Conversion Burners, Cast Iron and Copper Coil Burners



## Making a Horn Boot Fitting

... which can be used — with any degree elbow  
— where space is limited or change of  
shape and direction is needed  
to complete a branch run



1 IN A TYPICAL application (left), the horn boot fitting is connected to a 90 deg elbow at the base of a wall stack. It can be used with any degree elbow because the boot can be rotated (right)

FIG. 1, LEFT, SHOWS a practical application of the horn boot fitting to be described. It can be readily seen from Fig. 1, right, that the fitting can be used with any degree elbow because the boot can be rotated to suit the angle required to meet the wall stack. Fig. 1, left, shows a branch duct coming off the main trunk line with the horn boot fitting in the horizontal position connected to a 90 deg elbow at the base of the wall stack. The short throat on this type fitting aids in an installation where space is limited and a change of shape and direction is required to complete a branch run.

In the design of a fitting of this type, the area of the rectangular air outlet end should be equal to the area of the round outlet end.

In calculating the diameter of the branch duct, let it be assumed that the width of the wall register opening is 14 in. and the wall stack is  $14 \times 3\frac{1}{4}$  in. The area of the wall stack in square inches will be  $14 \times 3.25$  or 45.5 sq in., which is equal in area to a  $7\frac{1}{2}$  in. diameter duct.

There being no standard round duct with a  $7\frac{1}{2}$  in. diameter, it is necessary to select either a 7 or 8 in. duct. In this case, a 7 in. duct will be suitable, since a slight increase in velocity through this fitting assures adequate air motion at the point of delivery.

A study of the front and end views of the fitting (Fig. 2) will show that the end view is symmetrical about the center line and that all the work lines on the front view recede from the diameter to the common point C' on the rectangle.

From this analysis it can be concluded that all true length lines can be developed from a half end view and a height line equal to the perpendicular distance between point C' and the diameter line, which is 2 in. (see Fig. 2, left).

The following is a step by step solution to the pattern problem.

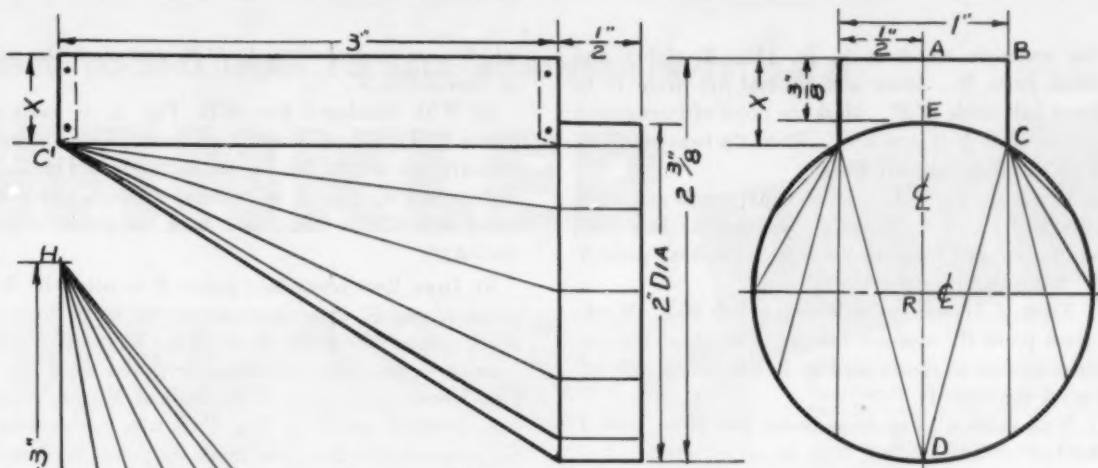
### To Construct Simplified Method Drawing, Fig. 3:

Duplicate the half end view drawing as shown by the outline letters A, B, C, and D in Fig. 2, right, by the following steps:

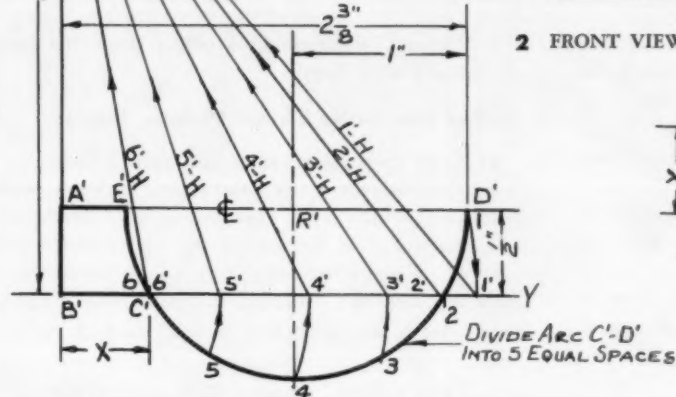
a) Draw an extended horizontal line and mark this line CL. On this line establish the given length,  $23\frac{3}{8}$  in., and mark the points A' and D'.

b) From D' measure 1 in. and mark the point R'. With R' as center and given radius 1 in. draw a half circle from D' to where it meets line A'D'. Mark this intersection point E'. From A' measure half the width

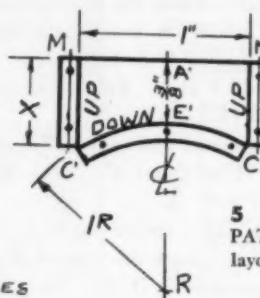




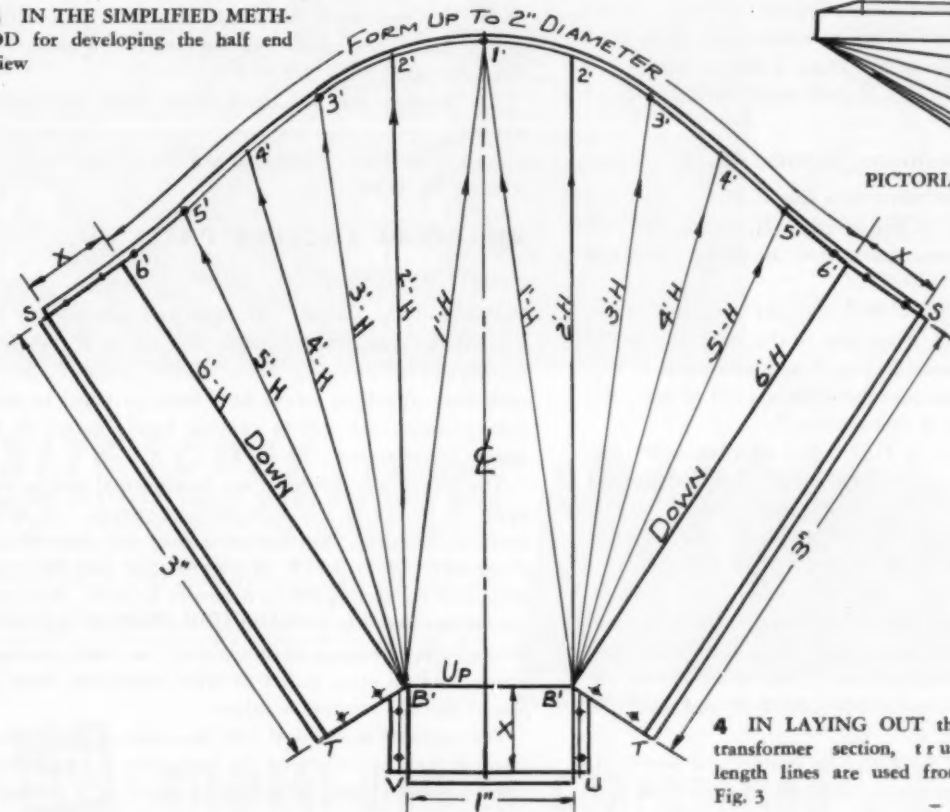
2 FRONT VIEW (left) and end view (right) are used . . .



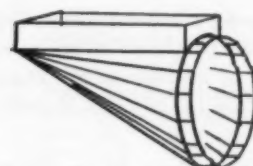
3 IN THE SIMPLIFIED METHOD for developing the half end view



5 COLLAR THROAT PATTERN — the final layout



4 IN LAYING OUT the transformer section, true length lines are used from Fig. 3



PICTORIAL DRAWING

of the rectangle which is  $\frac{1}{2}$  in. (Fig. 2, right) and establish point B'. Draw a horizontal line from B' to intersect half circle D'-E'. Mark the point of intersection C'. Draw lines A'-B' and B'-C'. Draw the heavy outlines A'-B', A'-E', B'-C', and arc E'-D'.

c) Divide the arc C'-D' into six equal spaces and mark the points 1, 2, 3, 4, 5 and 6. Extend the line B'-C' across the arc and  $\frac{1}{2}$  in. to the right. Establish point Y at the end of the extended line.

d) From B' draw a line at 90 deg to line B'-Y. Working from point B', measure the given length of the rectangular section as shown on Fig. 2, left, which is 3 in., and mark the point H.

e) With point B', Fig. 3, as center and B' to point 1 on the half circle as radius, draw an arc to intersect line B'-Y at 1'. Draw the true length line 1'-H.

f) Set a compass at radius B'-2, Fig. 3, and draw an arc to intersect line B'-Y. From the intersection point of the arc on line B'-Y, draw the true length line 2'-H.

g) Set a compass at radius B'-3, Fig. 3, and revolve point 3 to intersect line B'-Y at 3'. From 3' draw a line to H and mark the line 3'-H.

h) With B', Fig. 3, as center and radius B'-4, draw an arc to intersect line B'-Y at point 4'. Draw the true length line 4'-H.

j) With B', Fig. 3, as center and radius B'-5, draw an arc to intersect line B'-Y and mark this intersection point 5'. Draw a line from point 5' to H, and mark this line 5'-H.

k) On Fig. 3, set a compass point on point B' and with radius B'-6, draw an arc to intersect line B'-Y. Mark the point of intersection 6'. Draw a line connecting the revolved point 6' to point H, and mark the line 6'-H.

#### To Lay Out Transformer Section, Fig. 4:

a) Draw the 1 in. horizontal line B'-B'.

b) Set a compass at line length 1'-H, Fig. 3, and with points B' on Fig. 4 as centers, draw intersecting arcs and mark the point 1'.

c) With line length 2'-H, Fig. 3, as radii and points B', Fig. 4, as centers, draw arcs to the right and left of point 1'. Measure arc 1-2, Fig. 3, and with point 1', Fig. 4, as center, cut the arcs to the right and left of this point and mark the points of intersection 2'.

d) Measure line 3'-H, Fig. 3, and with points B', Fig. 4, as centers draw arcs. With equal space distance 2-3 on the half circle, Fig. 3, as radii, and points 2', Fig. 4, as centers, cut the arcs which were made with line 3'-H as radii and points B' as centers. Mark the points of intersection 3'.

e) With developed line 4'-H, Fig. 3, as radii and points B', Fig. 4, as centers, draw arcs. With arc length 3-4, Fig. 3, as radii and points 3', Fig. 4, as centers, cut the arcs which were made with radii 4'-H, and mark the points of intersection 4'.

f) With points B' on Fig. 4 as centers and line 5'-H, Fig. 3, as radii, draw arcs. With arc length 4-5 on Fig. 3 as radii and points 4' on Fig. 4 as centers, cut the arcs

which were made with radii 5'-H, and mark the points of intersection 5'.

g) With developed line 6'-H, Fig. 3, as radii and points B', Fig. 4, as centers, draw arcs. With a compass, measure arc length 5-6 on the half circle, Fig. 3, and with points 5', Fig. 4, as centers, cut arcs which were made with 6'-H as radii, and mark the points of intersection 6'.

h) Draw lines connecting points 6' to points B'. From points 6' and B' draw (approximately)  $\frac{5}{8}$  in. lines perpendicular to lines 6'-H. From points B', draw (approximately)  $\frac{5}{8}$  in. lines perpendicular to line B'-B'. From Fig. 3 measure distance C'-B', marked X, and working from points 6' and B' on Fig. 4, transfer this distance to the perpendicular lines and mark the points S, T and U, V.

j) Through the developed points draw the pattern outline and work lines.

#### To Lay Out Collar Throat Pattern, Fig. 5:

a) Draw the vertical center line marked CL.

b) Establish the center point R, and with this point as center and radius 1 in., draw a long arc. Mark the intersection point of the arc on the center line with the letter E'. From E' measure  $\frac{3}{8}$  in. up the center line and mark the point A'. Through this point draw a line perpendicular to and extending to both sides of the center line.

c) From point A', measure  $\frac{1}{2}$  in. on both sides of the center line and mark the points M and N. From these points draw lines parallel to the center line to intersect the 1 in. radius arc at points C'.

d) Through the developed points draw the pattern outline.

Add allowances for seams and joints and mark the patterns for fabrication.

#### REPLACING COOLING PARTS —

(Continued from page 104)

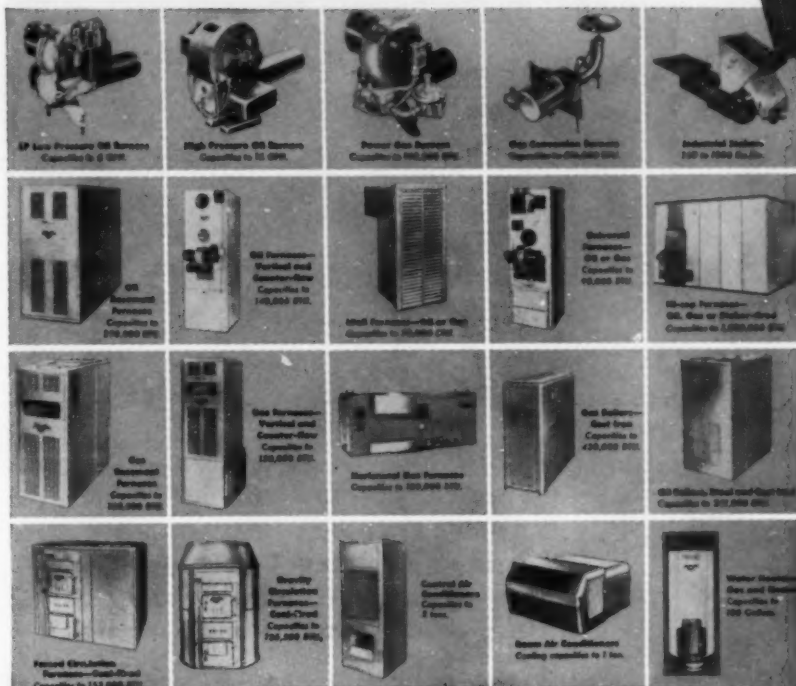
low side of the system. An open type compressor has been shown and provided with stop valves C and D to further aid in "pumping down." Finally, gages  $P_s$  and  $P_a$  with their attaching valves have been provided to make testing convenient and to provide handy access to the system for charging.

The procedures described are fundamental and as such apply in theory to any refrigeration system. In actual practice, however, manufacturers may not normally include valves A, B, and C in systems, nor may the gages with their connecting valves normally be used. Receivers are seldom found in packaged air conditioners any more. Hermetic compressors have replaced the open type machines, and on some makes of units, restrictors have replaced thermal expansion valves.

The next article will deal with the newer systems which (though they have reduced the frequency at which servicing is needed) are, in one sense, more of a challenge to the service man.

# WINKLER

**DIRECT FACTORY  
FRANCHISE**



With the most complete line of home comfort equipment in this country, you can meet every buyer's needs and preferences . . . you have the edge in any selling situation.

Check the "Sensational Seven" below—where can you find their equal?

- 1 Sensational line of equipment.** Conceded to be America's most complete array of home comfort products.
- 2 New stocking plan.** Easy to finance a full stock—no sales lost for lack of equipment.
- 3 New warehouse locations.** Strategically located for speedy delivery.
- 4 Complete year 'round line.** Offers extra profits to live dealers.
- 5 New merchandising tools.** Everything a dealer needs to uncover prospects and get the order!
- 6 Bigger national advertising and sales promotion program.** An increased advertising schedule—monthly sales promotion programs—dealer cooperative advertising plan.
- 7 Bermuda Cruise.** Winkler dealers—new (if they hurry) as well as old—can win this glamorous vacation cruise.

### Winkler certainly offers more in '54

**WINKLER DISTRICT SALES MANAGER WILL GIVE YOU FULL DETAILS**—Winkler District Sales Managers are located the country over. Their sole function is to help you build your business into a hard-hitting, successful operation. Your inquiry today will have the personal attention of one of these men.

**WINKLER TRAINING INSTITUTE**—Winkler backs up this program with a comprehensive Training Course covering every phase of successful selling, installing and servicing of Winkler Products. Free to dealers and their personnel.



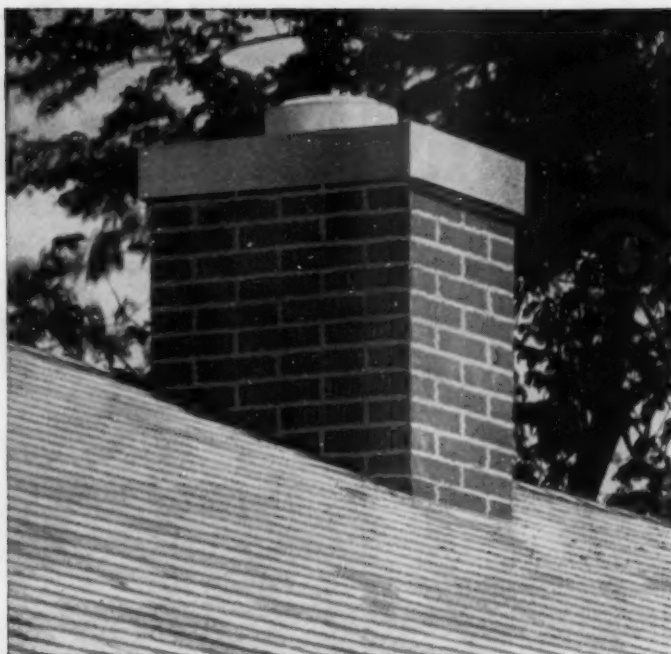
**Winkler District Sales Managers, located coast to coast, help build your business.**



**STEWART-WARNER CORPORATION**  
U. S. MACHINE DIVISION • Dept. A-44 • LEBANON, IND.



# Van-Packer Chimney Housing Builds Profits for Heating Contractors



Van-Packer "Brick-Panel" Chimney Housing has the massive appearance of conventional brick housing when assembled. Brick-red cement asbestos panels are deep embossed with brick texture and natural color mortar lines.

## Genuine Masonry Chimney plus "Brick-Panel" Housing provides Safety and beauty for all homes

Non-brick appearance no longer need prevent any heating contractor from taking advantage of the Van-Packer Masonry Chimney as a genuine lifetime masonry chimney, packaged to go up in 3 man hours or less. The massive Van-Packer "Brick-Panel" Housing is the answer. It is also the answer to increased sales for you as a heating contractor, since you can install the entire heating job, including the chimney.

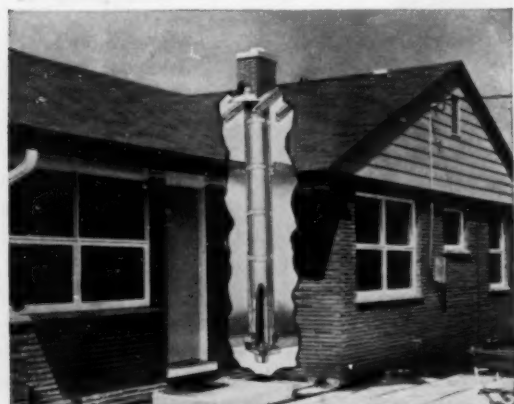
The housing has the home buyer acceptance of conventional brick. It is quickly assembled on the job from molded cement asbestos panels, deep embossed with brick texture. Panels are brick-red with natural color mortar lines. Deep embossing permits matching other brick colors while retaining natural color mortar lines. Housing measures 16" wide by 24" deep.

The Van-Packer Chimney is listed for all home heating plants and incinerators by U.L., F.H.A. and all major building codes. Van-Packer chimney sections have the insulating value of a 24" solid brick wall and no clearance to wood construction members is necessary. It's completely packaged for easy handling.

Nationally distributed, immediate delivery. See your local classified telephone directory for listing of Van-Packer heating or building material jobber. If no Van-Packer distributor is listed, write Van-Packer Corp.



"Brick-Panel" Housing on this \$26,000 ranch home painted to match light yellow brick has retained brick texture and natural color mortar lines. Housing is easily cut to fit any roof ridge or pitch.



Sectional construction (shown above in cut-away) saves 30% to 50% on time and material over brick chimney cost. The Van-Packer may be placed directly over furnace in center of house as easily and inexpensively as against a wall.

**Van-Packer**



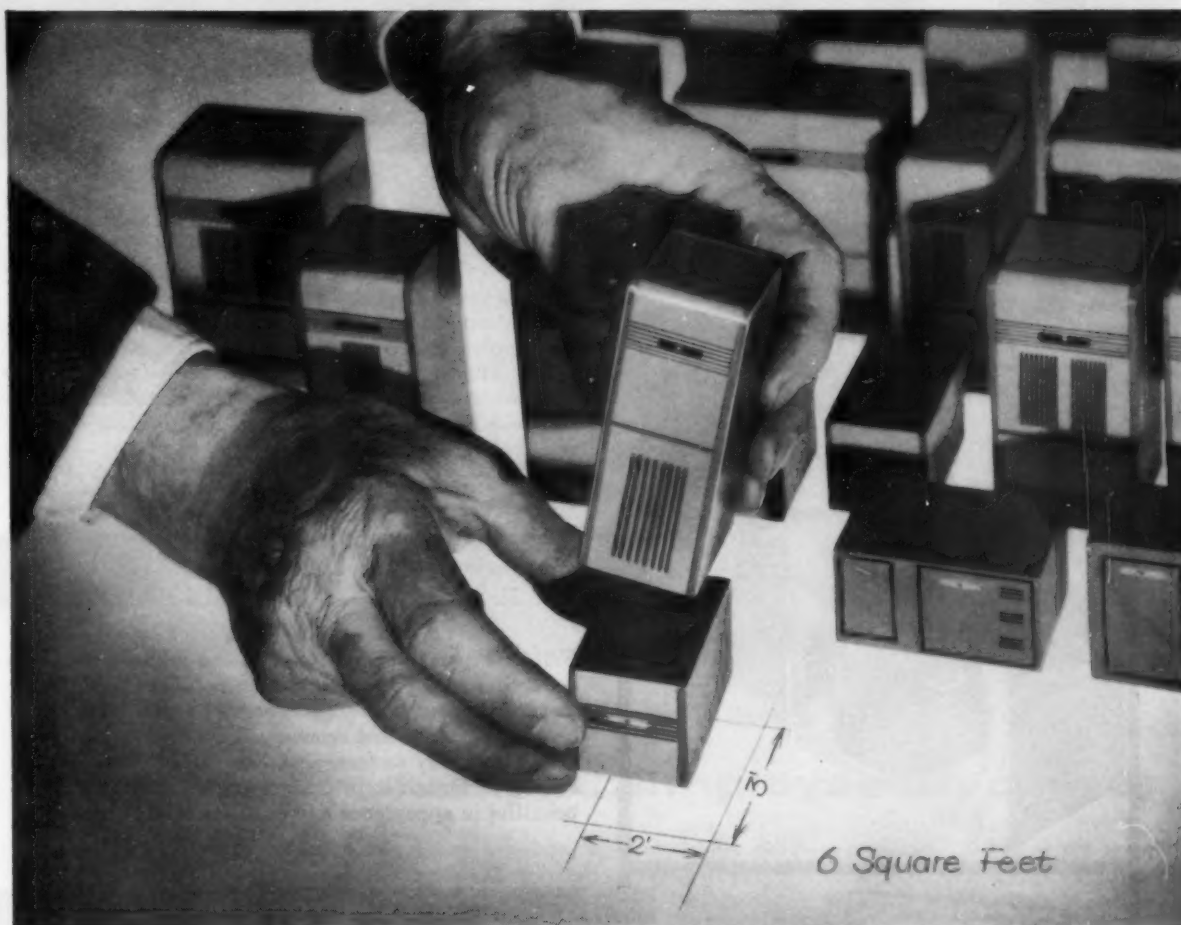
**PACKAGED MASONRY CHIMNEY  
WITH "BRICK-PANEL" HOUSING**

Van-Packer Corporation

Dept. 11D — 209 S. LaSalle Street, Chicago 4, Ill.



# Now—4,784 heating-cooling combinations from 50 basic G-E units...



## ...exclusive feature of "The Franchise with a Future"

**UPFLOW, DOWNFLOW, HORIZONTAL UNITS—G. E. HAS THEM ALL** • Assembling this new G-E Downflow Year-Round Air Conditioner is almost as easy as it looks in the picture. G. E.'s *Upflow* Furnaces and Cooling Units, and *Horizontal* Furnaces and Cooling Units, pair up the same way. Heats with gas or oil, cools by electric refrigeration (water- and air-cooled models). And with G-E Air-Wall System, whose registers handle heating and cooling equally well, the G-E dealer can tailor comfort to fit any home—sell modern living at its best.

New dealers are needed in this rapidly expanding field. Would you like to know more about your opportunities as a G. E.-franchised dealer? Then mail the coupon today!



**AIR WALL**  
SYSTEM

**HOME HEATING and COOLING**

\*Reg. trademark General Electric Co.

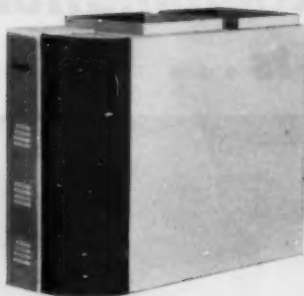
### G. E.'s 6-POINT PROFIT PLAN:

1. G. E. enjoys best consumer acceptance in the field.
2. Most flexible (and most copied) heating and cooling line on the market.
3. G-E units are easier to handle and install. Units are factory-wired, assembled and fire-tested ... pass through normal doorways without dismantling.
4. Factory training for your men, at G. E.'s application and service field schools.
5. G. E.'s consistent national advertising to homeowners and builders pre-sells your prospects.
6. G. E. supports you with local newspaper advertising, literature, displays, sales plans — to sell homeowners and builders.

**GENERAL  ELECTRIC**

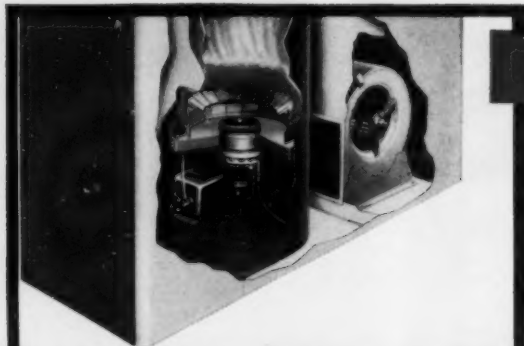
General Electric Company, Home Heating and Cooling Dept., Sec. AA-5, Air Conditioning Div., Bloomfield, N. J. Yes, I'm interested in your "Franchise with a Future." Tell me more. My principal business is .....

NAME .....  
COMPANY .....  
ADDRESS .....  
CITY ..... COUNTY ..... STATE .....



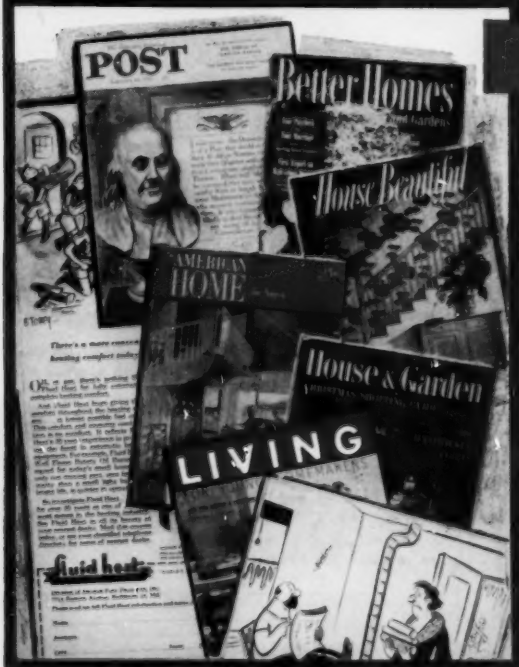
## ... how fluid heat gives you all you need to make more sales

Because the Fluid Heat Oil-Fired line is so complete . . . featuring Pressure Burners, Wall Flame Rotary Burners, Warm Air Furnaces and Boiler Burner Units . . . every house is your prospect. Large or small, old or new, every installation can be a Fluid Heat installation because you can supply customers with the ideal unit for their requirements. The completeness of the line means home owners and builders alike are your potential customers. In the complete Fluid Heat line you have a natural sales-blazer and profit maker.



## make more sales

Fluid Heat quality gives you all the selling points you need to make prospects customers. The Wall Flame Rotary Burner, for instance, has set a new standard of heating efficiency and economy . . . efficiency and economy that's easy to recognize, easy to sell. This Rotary Burner is ingenious in design, rugged in construction, beautiful in appearance and economical in operation.

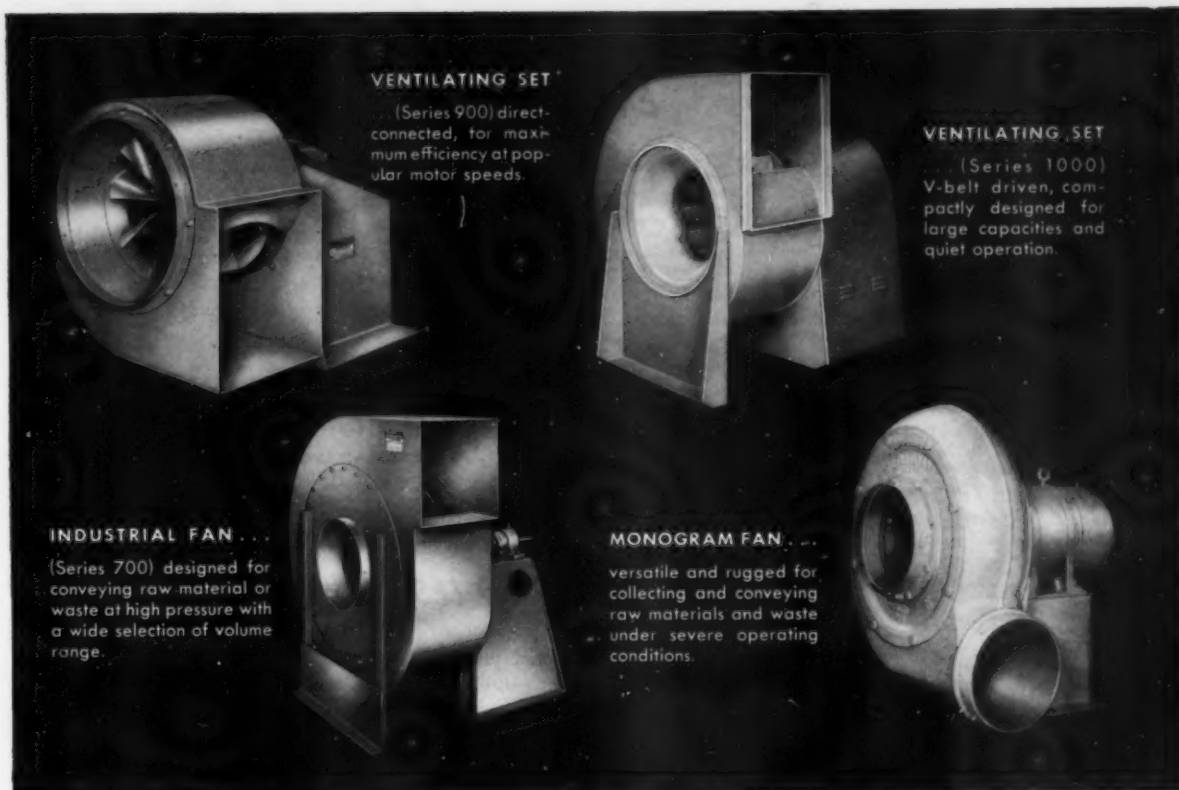


## make more sales

National advertising in publications like *Saturday Evening Post*, *Better Homes & Gardens*, *American Home*, *Living for Young Homemakers*, *House & Garden* and *House Beautiful*, will pre-sell your prospects day in and day out throughout the year. This hard-hitting program, plus the Fluid Heat Sales Manuals and attractive, detailed literature, gives you maximum support in your selling efforts . . . helps you build sales and profits. Want more details on how a Fluid Heat dealership can help put more money in your pocket? Then write today. Address: *Fluid Heat Division, ANCHOR POST PRODUCTS, INC.*, 6720 Eastern Avenue, Baltimore 24, Md. or Coolbaugh Street, Red Oak, Iowa.

**fluid heat**  
AUTOMATIC HEATING EQUIPMENT  
"WORLD'S ECONOMY CHAMPION"

Division of ANCHOR POST PRODUCTS, Inc.  
Sales Offices and Factories: Baltimore, Md. and Red Oak, Iowa



#### VENTILATING SET

(Series 900) direct-connected, for maximum efficiency at popular motor speeds.

#### VENTILATING SET

(Series 1000) V-belt driven, compactly designed for large capacities and quiet operation.

#### INDUSTRIAL FAN

(Series 700) designed for conveying raw material or waste at high pressure with a wide selection of volume range.

#### MONOGRAM FAN

versatile and rugged for collecting and conveying raw materials and waste under severe operating conditions.

## These Westinghouse Fans Help You Increase Production...Employee Efficiency

Whatever your air handling problem . . . smoke, fumes, vapor, dust, wood shavings, granular material or ventilating . . . these Westinghouse fans are designed to handle or remove them . . . efficiently and economically.

**Monogram and Industrial Fans** are designed for collecting and conveying raw materials and waste . . . and permit a wide range of selections to meet the most exacting requirements.

**Ventilating Sets** are designed for maximum efficiency, quiet operation and low power consumption . . . for years of trouble-free operation.

Each of these rugged, powerful Westinghouse fans will prove to be the most economical solution to your specific air handling problem. And Westinghouse fans offer a *single equip-*

*ment warranty* with undivided responsibility . . . an *exclusive* Westinghouse-Sturtevant feature. Get the fan built for *your* need from your nearest Westinghouse-Sturtevant office today. Or write: Westinghouse Electric Corporation, Sturtevant Division, Hyde Park, Boston 36, Mass.

#### SERIES 900 VENTILATING SETS

Compact, efficient, direct-connected and ready-to-run. Especially suited for small ventilating installations. Radial blade wheel design minimizes problem of airborne dirt and grease. Designed for volumes to 3200 cfm.

#### SERIES 1000 VENTILATING SETS

V-belt driven, self-contained. Adaptable to either indoor or outdoor installations for a wide variety of heating, ventilating or air conditioning

applications. Designed for volumes to 14,000 cfm. Available in sizes from 9" to 30" wheel diameters.

#### INDUSTRIAL FANS (SERIES 700)

Permits a wide range of volume selections at high pressure for handling and conveying raw material and waste.

#### MONOGRAM FAN

Ruggedly built, many-purpose fans for use either as a blower or exhauster for dust control, collecting and conveying waste or raw materials, and supplying air for furnace blast, drying, etc. Provides long, trouble-free service at low cost under severest operating conditions. Available in ten sizes with capacities from 200 to 13,500 cfm . . . pressures from 1" to 12" wg.

## WESTINGHOUSE AIR HANDLING

J-62185

YOU CAN BE SURE . . . IF IT'S **Westinghouse**



## \* International Economy®

### NEW ASSEMBLED OIL LO-BOYS

MODELS OL-95

Look at these sales-clinching features: OL-111  
OL-85E

- Completely Assembled — Easier Installation.
- Steel Pan Bottom — No Grouting.
- Handsome Heavy-Gauge Cabinet.
- OL-95 and OL-111 Available With or Without Vestibule.
- Three Assembled Sizes — 84,000 — 96,000 and 112,000 Btu. Output.
- 10-Year Warranty on Heating Element, Combustion Chamber and Cabinet.
- Convertible to Gas.



**INTERNATIONAL**  
Heater Co., Utica 2, N.Y.

## EVERYBODY'S TALKING ABOUT ECONOMY\*

*It's the hottest topic in town!* International Economy® now offers the greatest line-up of oil, gas and coal-fired furnaces in its 112-year history! More models, more new features for your customers to choose from . . . more profitable advantages for you!

### TALK ABOUT PERFORMANCE!

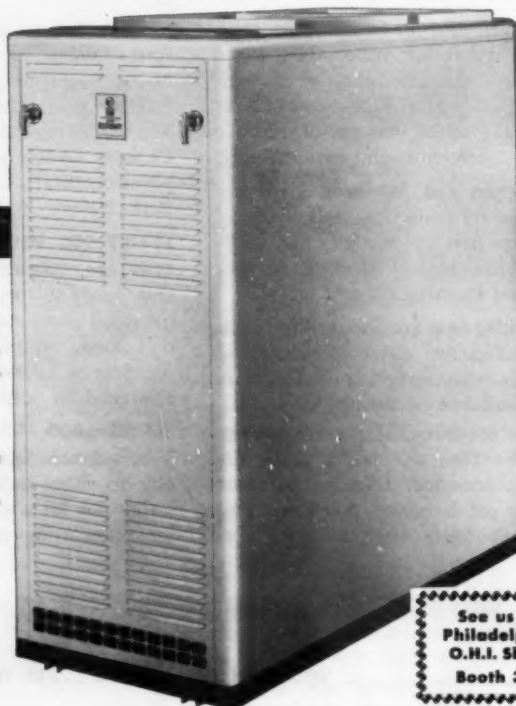
In action . . . under fire — that's when Economy furnaces perform best! Your customers get more comfortable, more dependable, more convenient heat . . . you get all the credit — and the cash!

### YOU DO LESS... MAKE MORE

Best part about Economy-engineered furnaces — once installed, they get along without you very well! This means fewer call-backs . . . bigger profits . . . customer satisfaction. Also — many International Economy furnaces are assembled and wired at the factory . . . making your job that much easier and faster.

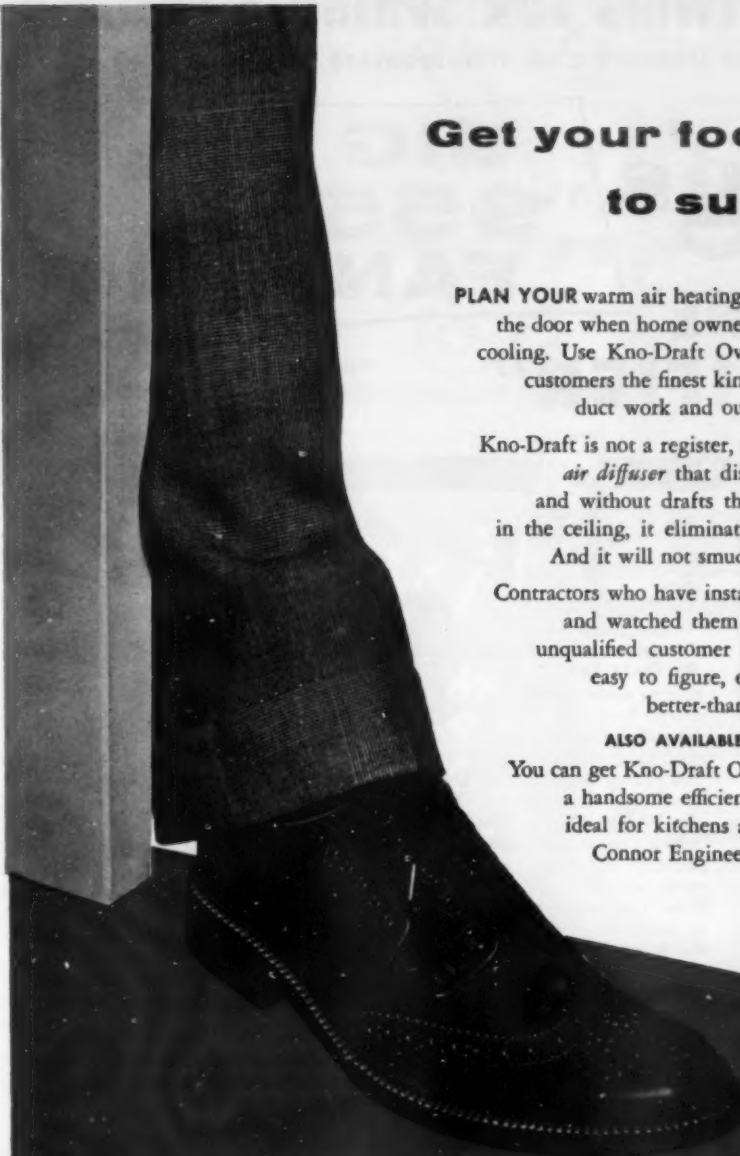
Quality, performance, dependability plus unparalleled economy — no wonder everybody's talking about Economy! If you'd like to hear more . . .

See your distributor or write: Dept. A-16



See us at  
Philadelphia  
O.H.I. Show  
Booth 352





## Get your foot in the door to summer cooling

**PLAN YOUR** warm air heating jobs right, and you'll have your foot in the door when home owners decide the time has come for summer cooling. Use Kno-Draft Overhead Air Diffusers. You'll give your customers the finest kind of heating comfort and have the ideal duct work and outlets in when they're ready for cooling.

Kno-Draft is not a register, not a grille—it's a scientifically designed *air diffuser* that distributes the air—warm or cool—evenly and without drafts throughout the conditioned area. Located in the ceiling, it eliminates all problems in furniture placement. And it will not smudge ceiling or walls.

Contractors who have installed Kno-Draft Overhead Air Diffusers, and watched them through several heating seasons, report unqualified customer satisfaction. Kno-Draft installations are easy to figure, easy to make—and you can count on a better-than-average profit.

**ALSO AVAILABLE WITH INTEGRAL LIGHTING:**

You can get Kno-Draft Overhead Air Diffusers with a handsome efficient lamp as an integral part of the unit—ideal for kitchens and bathrooms. Mail coupon for details. Connor Engineering Corporation, Danbury, Connecticut.



**CONNOR**  
ENGINEERING  
CORPORATION

**kno-draft**  
residential air diffusers

CONNOR ENGINEERING CORP.

Dept. 1-44, Danbury, Connecticut

Please send ( ) full information on Kno-Draft Overhead Air Diffusers; ( ) data and prices on the new Kno-Draft Integral Lighting Fixtures.

Name \_\_\_\_\_

Residence \_\_\_\_\_

Company \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Zip \_\_\_\_\_

# "THE TURNOVER TWINS FOR SPRING & SUMMER

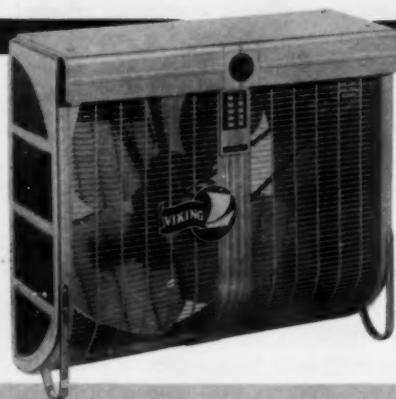
That's What Dealers and Wholesalers Call

## Viking's "ARID-ZONE" DEHUMIDIFIER"

## BIG "955" FAN...



reports Bill Seibenthaler, friendly  
Viking representative of  
Shawnee, Kansas



This Seafoam Blue "955" with its convenient Push Buttons exhausts 3500 cubic feet of hot stale air every minute replacing it with cool night breezes that let the whole family sleep cool. And it's Electrically Reversible for cool air circulation during the day.



**"Far-sighted Dealers Profited On These Two . . .** Smart heating dealers in our territory have long been expanding their lines to include profitable products such as this Viking Big Fan and Dehumidifier. Our dealers prefer the Viking Big Fan because Viking's one model is what the majority of their customers need and buy. The "Arid-Zone" Dehumidifier is a natural since our dealers get into the basement where moisture problems are obvious and can helpfully suggest an "Arid-Zone" as the solution. **That's the story told our representative by James S. Reed of A. Y. McDonald Mfg. Co. in Joplin, Mo.**



Sell this Desert Tan "Arid-Zone" to the customer with moisture problems. It absorbs excess moisture, won't overflow, shuts itself off, flashes a red warning light when full and starts automatically when emptied. Complete with accessories necessary to permit installation of permanent drain. Then light guards against blocking of drain.



### "For Economical Cooling Viking's Big Fan is Tops . . .

Lots of our customers think a room cooler too expensive for the amount of cooling it does. All they want to do is sleep cool. And this Viking Big Fan lets the whole family do just that for less than \$100. It's got a short selling season and produces volume sales for small space and inventory requirements. Good sales in past years have made me a steady customer". So says George Steele of Steele Sheet Metal Works in Joplin, Mo.

### VIKING'S 1954. CO-OP KITS— COMPLETE SELLING REPORT

Each Kit contains newspaper ads, radio and television commercials, publicity stories, window streamers, news about displays and available mats for both products. And with both products you receive Vadnits (Viking Advertising Units) worth \$3.00 each on up to 50% of the cost of your local advertising done on either product.

### "This 'Arid-Zone' is The Answer To Every Customer's Moisture Problem . . .

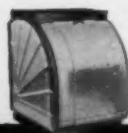
Most moisture problems are worse in the basement of the house, so we have many opportunities to lead right into a sale. And it's easy to sell the "Arid-Zone" primarily because it's completely automatic and won't overflow like the others. And if the customer wants a permanent drain, Viking includes all the accessories I need to do the job. I always keep an ample inventory on hand. **That enthusiastic reaction from Robert E. Smith of Cotton Smith Plumbing Co. in Neosho, Mo.**



Order Both of These Fast-Selling "Turn-over Twins" Today.



DIVISION OF THE NATIONAL RADIATOR COMPANY  
5601 Watworth Ave., Cleveland 2, Ohio



Viking  
Blower Packages



Viking  
Blower Assemblies



Viking  
Humidifiers

Other Viking  
Products  
Dehumidifiers  
Attic Fans  
Window Fans

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

### CORROSION RESISTANCE

Media	Index	Media	Index	Media	Index
Acetic Acid—5% Conc. 70°F	7	Acetic Acid—10% Conc.	8	Coke	4
Acetic Acid—10% Conc.	9	Acetic Acid—20% Conc.	10	Coke—Baking	5
Acetic Acid—20% Conc.	11	Acetic Acid—30% Conc.	12	Copper Sulfate—Sat. Sol.	7
Acetic Acid—30% Conc.	13	Acetic Acid—40% Conc.	14	Cryst. Soda—Sat.	7
Acetic Acid—40% Conc.	15	Acetic Acid—50% Conc.	16	Cryst. Soda—Sat.	7
Acetic Acid—50% Conc.	17	Acetic Acid—60% Conc.	18	Cryst. Soda—Sat.	7
Acetic Acid—60% Conc.	19	Acetic Acid—70% Conc.	20	Cryst. Soda—Sat.	7
Acetic Acid—70% Conc.	21	Acetic Acid—80% Conc.	22	Cryst. Soda—Sat.	7
Acetic Acid—80% Conc.	23	Acetic Acid—90% Conc.	24	Cryst. Soda—Sat.	7
Acetic Acid—90% Conc.	25	Acetic Acid—100% Conc.	26	Cryst. Soda—Sat.	7

**302  
316  
430**

**FULLY  
RESISTANT**

See Note "B"

### RESISTANCE TO SCALING

Temp., °F	Index	Temp., °F	Index	Temp., °F	Index
1200	1	1800	5	2400	9
1400	2	2000	6	2600	10
1600	3	2200	7	2800	11
1800	4	2400	8	3000	12

**314**

### MACHINABILITY

% of Hard Steel	Index
40	6
50	7
60	8
70	9
80	10
90	11
100	12

**483  
410  
430  
442  
444**

1430 IS FREE-MACHINING COUNTERPART OF 430  
1430 IS FREE-MACHINING COUNTERPART OF 430

### Crucible

REZISTAL®  
STAINLESS STEEL  
SELECTOR

FOR MAKING THE MOST OF  
STAINLESS STEEL

NOW!

HERE'S THE  
ANSWER  
TO FAST  
ACCURATE  
SELECTION  
OF STAINLESS  
STEELS

The answer to most of your questions about stainless steels are right at your finger tips, when you use Crucible's unique new Stainless Steel Selector.

Want to know the machinability characteristics of a stainless grade? Resistance to corrosion or scaling? Physical or mechanical properties? You can get the answers to these and other questions simply by setting the arrow on the Selector slide at the proper window. It's just as quick and easy as that.

And almost as fast as you get the answer, you can get the steel you need. For many of the REZISTAL stainless steels shown on the Selector are carried in stock in Crucible warehouses conveniently located throughout the country.

To get your free copy just fill in and mail the coupon. Better do it now.

### HOW THE SELECTOR WORKS:

Start with the problem. For example, resistance to corrosion in contact with copper sulfate. Just set the slide at the proper index number shown on the Selector (in this case on the back), and you have the answer in a second — grades 302 and 316 are fully resistant to this form of attack.

Crucible Steel Company of America  
Dept. AA, Henry W. Oliver Building  
Pittsburgh, Pa.

Name \_\_\_\_\_  
Company \_\_\_\_\_ Title \_\_\_\_\_  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_

CRUCIBLE

first name in special purpose steels

54 years of *Fine* steelmaking

STAINLESS STEELS

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.  
REX HIGH SPEED • TOOL • REZISTAL STAINLESS • MAX-EL • ALLOY • SPECIAL PURPOSE STEELS

# ZONE CONTROL with ECONOMY

For AIR CONDITIONING  
AND HEATING SYSTEMS

It's Easy and Highly Profitable

With **CRISE ZONETROLS**

Zone control is the sure way to sell satisfaction to your customers for central air conditioning and/or heating. You can install zone control systems economically and profitably with Crise Zonetrol Units. They open or close the duct dampers of

any forced air system in response to temperature changes. When the thermostat in any zone calls for heat or cold, the Zonetrol motor serving that area automatically opens the damper and at the same time closes a built-in switch to start equipment running.



## DAMPER MOTORS

### MODEL AD MOTOR

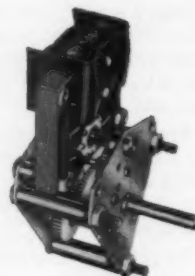
This totally enclosed motor comes in an attractive die cast housing. It mounts in any position on a convenient base, ready at the flick of a switch to open or close the duct damper.



ENCLOSED  
MOTOR

### MODEL SK MOTOR

Here's the way to install motor operated dampers at rock bottom prices. Simply enclose the Crise skeleton motor in your own inexpensive housing and you're in business.



SKELETON  
MOTOR

All Crise motors are available for reversible operation with 2 or 3 wire circuits, and for single direction with external return spring.

CRISE CONTROLS DIVISION

**ACRO**  
MANUFACTURING COMPANY  
COLUMBUS 16, OHIO



# Air Control

## QUICK SELECTION CHART

FOR HEATING...FOR COOLING

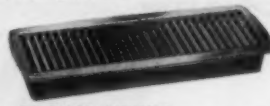
### DIFFUSERS for Perimeter and Ceiling Installations



**NO. 180 BASEBOARD DIFFUSER** . . . . .  
Low in cost, superbly styled. Easily installed in single or multiple units. In standard 4' and 2' sections. Balancing Damper.



**NO. 15 SIDEWALL DIFFUSER** . . . . .  
Blankets cold walls from a sidewall location. Delivers a spread up to 21' wide. Low resistance — adjustable damper.



**NO. 42 FLOOR DIFFUSER** . . . . .  
Decorator-styled and inexpensive. New wafer-thin valves and adjustable vanes cut resistance, increase performance. 4" x 10", 4" x 12", 4" x 14"; also 2 1/4" x 14".



**CEILING DIFFUSERS** . . . . .  
Tops for overhead heating and cooling, gives rapid air diffusion. Step-down design. 7 sizes from 6" through 22". Flush or Step-down type.



**DUAL-VALVE DAMPER** . . . . .  
For SD and Flush-type Ceiling Diffusers. Assures even air distribution — balances system at diffuser face. 6" to 14" size. Single valve damper for 18" and 22".

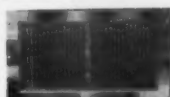


**333 RETURN AIR GRILLES** . . . . .  
Ideal for centralized returns. One grille in larger sizes adequate for entire system. 13 sizes from 10" x 10" through 30" x 18". Free areas from 68 to 373 sq. in.

### FORCED-AIR REGISTERS AND GRILLES



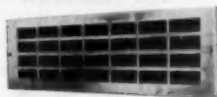
**NO. 10 SERIES FOR SIDEWALL OR BASEBOARD**  
Superb performance — beauty that sells. Complete horizontal and vertical control of the air stream. 23 sizes from 8" x 4" to 30" x 8" in registers and matching grilles.



**NO. 110 SERIES FOR SIDEWALL OR BASEBOARD** . . . . .  
For style and economy. Complete horizontal air control. Adjusto-Stop damper balances system. Same sizes as 10 Series, matching grilles available.



**NO. 210 SERIES FOR SIDEWALL OR BASEBOARD** . . . . .  
Handsome, inexpensive. Complete vertical control of air stream. 20 sizes from 10" x 4" to 30" x 8" in registers and matching grilles.



**NO. 334 RETURN AIR GRILLES** . . . . .  
Narrow width — ideal for installation in toe-spaces, stair risers, etc. 15 1/2" x 3 3/4" overall, free-area, 29 sq. in.

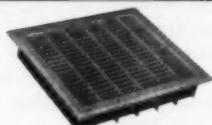


**NO. 262 BASEBOARD RETURN AIR INTAKES**  
Ideal for baseboard installation. Made in two projections — 3 3/4" and 4 1/4". 5 opening sizes from 10" x 6" through 30" x 6".

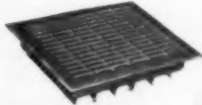


**NO. 260 RETURN AIR INTAKES** . . . . .  
3 types for flush or projected installation in stair risers, toe-spaces and other hard-to-fit spots. 6 sizes from 14" x 4" through 30" x 5".

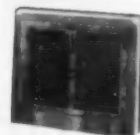
### FLOOR REGISTERS



**NO. 40 FLOOR REGISTERS** . . . . .  
Best quality and best value. Rigid-Lock construction gives a solid, level walking surface. 14 sizes from 4" x 12" through 14" x 16". Matching return air grille shown below — No. 41.



**NO. 30 FLOOR REGISTERS** . . . . .  
Superior quality at low cost. One-piece face — no corner seams, no rattles. 14 sizes from 4" x 12" through 14" x 16". Matching return air grille shown below — No. 31.



**NO. 50 GRAVITY REGISTER** . . . . .  
For baseboard installation. Low resistance — adjustable fins — balanced damper. Ideal for gravity installation or forced-air conversions. 5 duct sizes from 10" x 8" through 13" x 11".



For complete engineering data, Refer to 54 AC catalog or see your local jobber.



**AIR CONTROL PRODUCTS, INC.**  
DEPARTMENT A  
COOPERSVILLE, MICH.



# LIFETIME FILTER



**3 simple steps  
to clean:**

**1** Remove 2 wing nuts.



**2** Hold filter element under faucet for few minutes to remove dirt and impurities.



**3** Empty water and heavy residue out of cup — and reassemble filter.



**FOR ALL GRAVITY-TYPE BURNERS** and suitable for use on power burners up to 5½ gph with No. 1 or 2 fuel oil.



**DEPENDABLE Controls**

for Air • Oil • Liquids • Refrigerants

**Install profitable Trap-It  
and Oilifter on that next job**

**A-P CONTROLS  
CORPORATION**

2452 N. 32nd Street, Milwaukee 45, Wis.  
In Canada: A-P Controls Corp., Ltd., Cooksville, Ont.



**OILIFTER**

**ENDS OIL LUGGING FOR GOOD!**

Oilifter automatically pumps fuel from a submerged tank up to a furnace or from a basement or ground-level tank to a heater on the first, second or third floor — up to 25 feet if necessary. Oilifter is the clean, effortless way to efficient appliance operation.



**MECHANICAL SAFETY-FLOAT PROTECTION**—no overflow pipe needed.



**AUTOMATIC CUTOUT SWITCH** stops Oilifter if tank runs dry.



**BUILT-IN STRAINER** — 100 mesh. Prevents operating failures due to impurities in the oil.

## New Heil Horizontal Furnaces Answer Tough Space Problems

*Versatile Units Easily Installed In Basement Or Attic — Floor Or Ceiling*

The new Heil series of horizontal gas-fired and oil-fired furnaces provides the ultimate in adaptability. Practically any space can be used. Installations can be made in an attic space, under the floor, in a regulation basement, or suspended in a utility room.

These horizontals are powerful warm air package units combining quiet, efficient, and economical operation with gentle "blending" of evenly tempered air. They were developed by combining proved heating and design principles in response to an insistent demand for a horizontal, suspended, or stowaway unit.

Available in a wide range of capacities, they are well-suited to homes of practically any size and construction. In large or rambling homes, it may be advisable to install a zone system with a unit for each zone. While seldom necessary, this practice does result in substantial fuel savings.

Further flexibility in installation is provided in the design and placement of components. The control mounting and flue outlet are completely reversible to either side of the unit. Both sides of the cabinet have access doors to the blower compartment to permit increased versatility in installation. They are shipped as factory assembled units, complete with adjustable mounting brackets for either overhead suspension or base setting, and all necessary controls.



Model HO  
Oil-Fired  
Unit

# THE HEIL



Model HG  
Gas-Fired  
Unit

# horizontals

- 5 gas-fired models; inputs ranging from 60,000 to 140,000 BTU.
- 4 oil-fired models; outputs ranging from 80,000 to 224,000 BTU.
- Blowers and blower motors are rubber mounted for silence.
- Oil model approved by Underwriters' Laboratories for installation within 6" of combustible materials.
- Gas model approved by AGA for safety and efficiency. Approved for attic installation.
- Control mounting and flue outlet on gas model are completely and easily reversible.
- Both oil and gas units are full factory assembled and wired.
- Famous HEIL Oil Burner is flange mounted in floating rubber insulators.
- Brackets are anchored to inner iron liner for suspended or base mounting.

**NOW more than ever... You're ahead with HEIL**

## THE HEIL CO.

MILWAUKEE 1, WISCONSIN

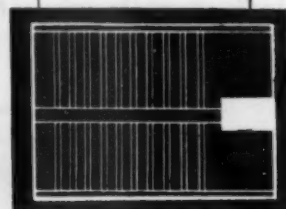
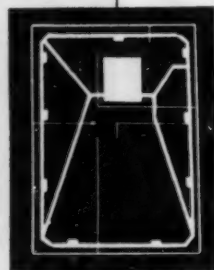
HILLSIDE, NEW JERSEY

SALES OFFICES: Union, N.J.; Atlanta, Ga.; Washington, D.C.; Cleveland, Ohio; Chicago, Ill.; Detroit, Mich.; Milwaukee, Wis.; Kansas City, Mo.; Denver, Colo.; Dallas, Tex.; Los Angeles, Calif.; Seattle, Wash.; New York, N.Y.

The Heil Co. is a member of OHI, GAMA and an associate member of NHTA.

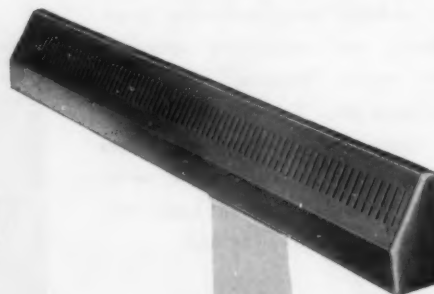
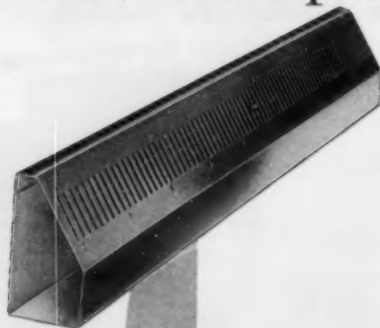


Which system shall I use?



Standard's perimeter baseboard registers

work  
with  
them all!



**for loop, lateral, crawl-duct, and all other systems, they're best!**

Standard's Perimeter Baseboard Registers, illustrated model C-F5, feature all the latest developments of perimeter heating and are the finest, most efficient registers on the market today. Each four-foot section has its own individually operated damper control, easily adjustable for minimum, medium, and maximum volume control. Standard's Perimeter Baseboard Registers spread warm air along the baseboards and do away with concentrated heat drafts that fade to cold spots in room interiors.

#### **features:**

- Each section controlled individually.
- Efficient Snap-on end caps.
- Heavy-duty construction of 20-gauge steel.
- Finished in prime coat . . . special finishes on request.
- Simplifies balancing of heating system.
- Comes in 4-foot sections with separate butt straps for continuous installation.
- Set\*LOK feature for positive air control available at slight extra cost.

Ideal for use in homes, schools, churches, and commercial installations. Also available as C-F4. Both designs have sliding damper control. Adaptable for year-round air conditioning.

**Standard Stamping & Perforating Co.**

3137 W. 49th Place Chicago 32, Illinois

For more information, and a copy of Standard's New Pocket Catalogue, showing complete line of registers and grilles, Mail Coupon Today.

Standard Stamping and Perforating Co. Dept. AA-4  
3137 West 49th Place, Chicago 32, Illinois

Gentlemen: Please send me more information about Standard's Perimeter Baseboard Registers and a copy of your Pocket Catalogue, at no obligation to me:

Name \_\_\_\_\_  
Firm \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_



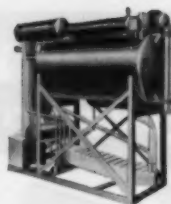
# Best Line!

## Servel Wonderair

The Servel dealer offers the widest air conditioning line . . . residential, commercial, industrial! *Only* Servel features silent, gas- or oil-fired *All-Year*® units . . . electric package units, water chillers!



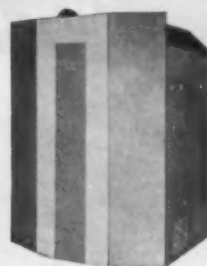
New electric package air conditioners in 3-, 5-, 7½-ton capacities!



Servel water chillers for industrial air conditioning, process cooling, special uses!



"Add-on" cooling: Every home with a modern gas furnace is a prospect!



Servel *Wonderair* All-Year air conditioners, with exclusive "absorption" principle!

# Best Name!

## Servel Wonderair

Servel's reputation for quality and dependability is a big sales asset. There are thousands of Servel air conditioners in America's homes today.



# Best Advertising!

## Servel Wonderair

The Servel Wonderair story is told time and again to your prospects in *The Saturday Evening Post*, *Better Homes And Gardens*, *House Beautiful*, *House & Garden*, *Small Homes Guide*, *Time*, *Newsweek*, and a long list of trade magazines!



# Best All 'Round!

## Servel Wonderair

Products, markets, profits—the Servel dealer has the greatest opportunity. Send coupon for details.

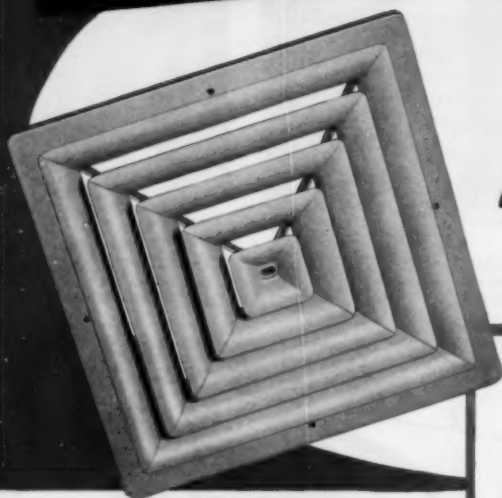
SERVEL, INC., Air Conditioning Division  
Dept. DE-44, Evansville 20, Indiana

Please send details on Servel line and franchise.

Name \_\_\_\_\_  
Firm \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_  
County \_\_\_\_\_ State \_\_\_\_\_

another *Lima* first

*New Beauty*  
for modern rooms  
*New Comfort*  
all year 'round

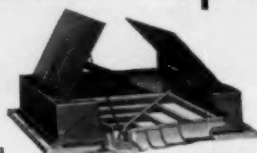


Series 60

new *Lima*

## SQUARE Step-Down Design CEILING DIFFUSER

for heating and cooling



Series 61  
DIFFUSER DAMPER

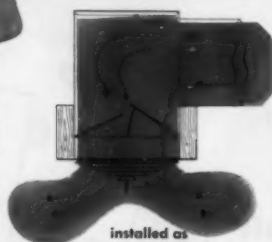
(Shown with  
Series 60 Ceiling  
Diffuser)

Full center opening delivers air through center of damper, assuring more effective diffusion pattern. Full air shut-off. Lima "balancing bell" control feature simplifies balancing. Square design damper permits installation with blades parallel to pipe allowing maximum air flow.

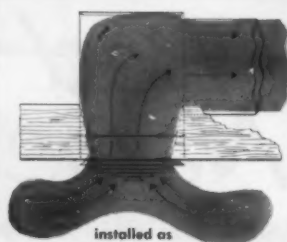


Series 63  
CEILING DIFFUSER  
ADAPTER HEAD

Galvanized installation adapter is shipped knocked down—snaps together with buttonhole and dimple snap lock. Fits over damper frame so round or rectangular piping can be installed by tapping into top or either side of adapter.



installed as  
warm air or cooling outlet.



installed as  
return air outlet for perimeter system.

Lima leads again with this new square design step-down ceiling diffuser. Attractively styled, the square design harmonizes with rectangular rooms and square block ceilings. Modern light beige actual finish eliminates need for repainting, unless desired.

Square design and tiers of step-down vanes provide greater free area for more effective air distribution with a minimum of resistance. Air is discharged outward and slightly downward in all directions at reasonably high velocity for complete 4-way diffusion without drafts. *Equally efficient for heating or cooling.*

Also recommended for return air outlets—especially in perimeter systems—eliminating large, unsightly grilles. Immediate delivery in six popular sizes. *See your local Lima jobber or write today for literature and prices.*

sold exclusively through heating  
wholesalers and manufacturers

**Lima**  
LIMA, OHIO

register company

nationally advertised  
to architects and builders.



# Tops the year 'round!



...like the new

## Clima-Twins

by Round Oak

You know, as we do... today's building market demands year 'round air conditioning. And so Round Oak proudly presents... the new CLIMA-TWINS, twin heating and cooling units.

Into the heating cycle is built the same sturdy dependability that makes Round Oak famous. If "stepping down" is necessary, the cooling unit may be added later... one "upstairs" control for both.



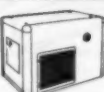





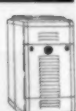
Round Oak's new "4-for-1 Deal" is today's answer for dealers to meet today's demands.

**AUTOMATIC  
HEAT**

**COOLING  
DEHUMIDIFICATION**



**ROUND  
OAK**  
DOWAGIAC, MICH.

 <b>Clima-Twins</b> water-cooled	 <b>Versat-Aire air-cooled Attic Unit</b>	 <b>Horizontal</b> water-cooled	 <b>Remote</b> air-cooled	
 <b>Versat-Aire 6 ton</b>	 <b>8' Remote</b> water-cooled	 <b>Oil</b>	 <b>Coal</b>	 <b>Gas</b>

Please return  
"4-for-1"

Name \_\_\_\_\_

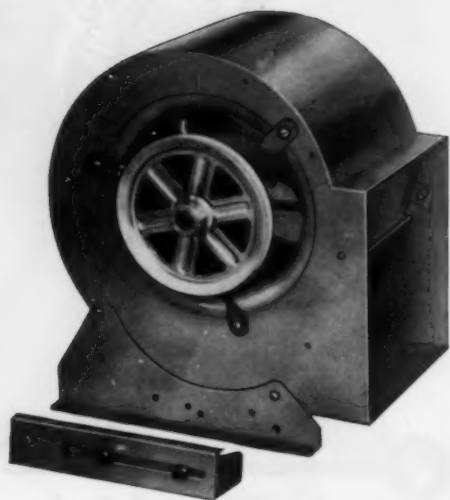
Address \_\_\_\_\_

City \_\_\_\_\_

Round Oak Co., Inc.  
Dowagiac, Michigan  
Please rush me details on your new  
"4-for-1 Deal":

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

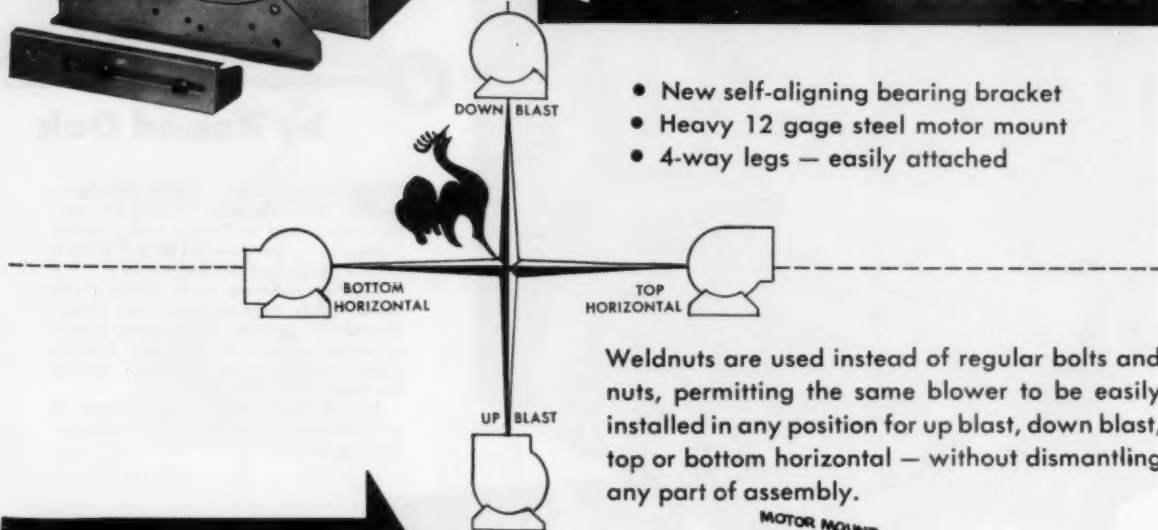
# Morrison Parts or Complete Assemblies For Original Equipment Manufacturers



Where Space and Man-hours will not permit building  
your own — buy

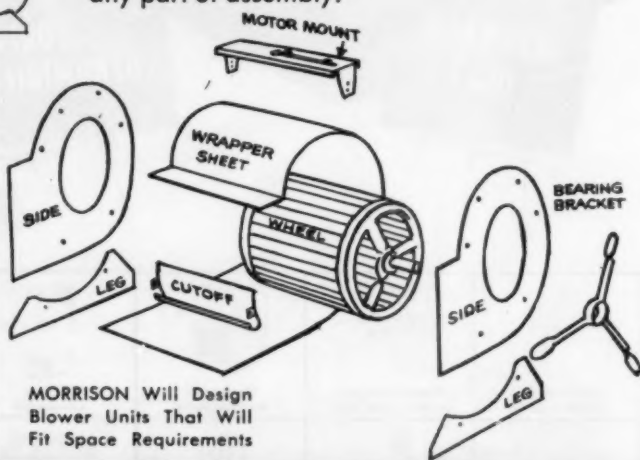
**MORRISON Complete Blower Assemblies for**

## STURDINESS AND QUIET OPERATION



- New self-aligning bearing bracket
- Heavy 12 gage steel motor mount
- 4-way legs — easily attached

Weldnuts are used instead of regular bolts and nuts, permitting the same blower to be easily installed in any position for up blast, down blast, top or bottom horizontal — without dismantling any part of assembly.



MORRISON Will Design  
Blower Units That Will  
Fit Space Requirements

Where possible, **BUY**  
Morrison Parts and Build  
Your Own Assemblies.

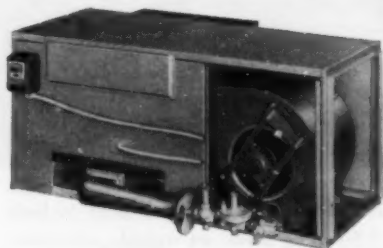
**SAVE UP TO 50%**  
Of Your Invested  
Blower Dollar.

**THE MORRISON PRODUCTS, INC.**

16816 Waterloo Road  
CLEVELAND, OHIO



tucked  
away for  
perfect  
warmth



## UTILITY'S HORIZONTAL FORCED AIR FURNACES

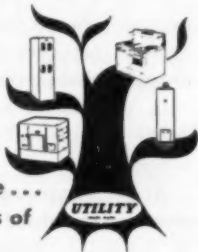
Even on jobs where floor space is extremely limited, you can offer your customers all the advantages of forced air heating. Utility's compact Horizontal Forced Air Furnaces fit under the house, in the attic, under the floor, under a staircase — in any out-of-the-way place — to save precious floor space.

Utility's patented, resilient-mounted blowers insure efficient, vibration-free operation.

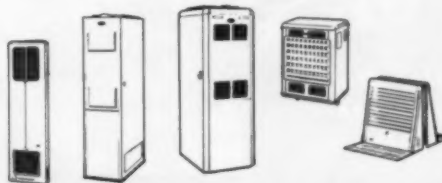
Automatic controls, trouble-free design assure you of fewer service call-backs, greater customer satisfaction. AGA-approved. Guaranteed in writing for 10 years. 65,000 — 90,000 — 115,000 — 140,000 BTU.

In small homes, or in remodeling jobs, these easy-to-install, low-cost Utility Horizontal Forced Air Furnaces meet competitive conditions... make it easier to "sell the job."

GAFFERS & SATTLER  
AND OCCIDENTAL  
AUTOMATIC GAS RANGES  
UTILITY  
FURNACES  
AIR COOLERS  
WATER HEATERS



a happier living family tree...  
all branches of



see the complete UTILITY heating line now

**UTILITY APPLIANCE CORP., DEPT. AAH4**  
4851 S. Alameda St., Los Angeles 58, Calif.

Please send me free information on:

- ☐ Utility Automatic Heating Equipment
- ☐ Utility Cooling Equipment
- ☐ Utility Automatic Gas Water Heaters

Name

Address

City  Zone  State

# EASIER to INSTALL

*Auto flo "100"*

**AUTOMATIC  
HUMIDIFIER**



**NO  
FLOAT**

**NO  
DRIP**

**NO  
CLOG**

## Eliminate Humidifier Service Calls

The revolutionary new Auto-flo "100" humidifier requires no servicing other than an occasional cleaning of the pan and the yearly replacement of the plates. A large size orifice replaces the float valve and there are no parts to stick, wear or clog up. Evaporator plates are equipped with drain clips to eliminate any possibility of dripping.

**ONE YEAR FACTORY  
GUARANTEE ON  
ALL  
PARTS**

THIS IS  
*Auto flo's*  
**Stainless Steel**

**\*DRAIN CLIP**  
that Prevents  
**WATER DRIP**

*Water drains  
into pan  
below*

**AUTO-FLO CORP.**

13526 Fenkell Ave. Detroit 27, Mich.

Auto-Flo Corp.  
13526 Fenkell, Detroit 27, Mich.

Please send me full information on Auto-Flo "100" Automatic Humidifier.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

**MAIL THIS COUPON**

## OHIO CONVENTION —

(Continued from page 114)

accounts every 30 days, noting any changes in payment habits. Letters, printed reminders, telephone calls — all may be used for collections, he said.

### Maintaining Employee Morale

In his talk on labor relations, Dr. P. N. Lehoczy, Dept. of Industrial Engineering, Ohio State University, stressed that the dealer should treat all employees alike — regardless of reasons which might be given for exceptions. For example, telephone privileges and time for breaks should be allotted equally to all employees. However, he warned against impractical agreements, such as stipulating that all overtime be divided equally among all employees. (This is impractical because skills vary widely, he stated.)

Discussing the general improvement in labor conditions, Mr. Lehoczy referred to the 19 hour day with a pay of 2½ cents an hour which prevailed 200 years ago. He stated that labor is still "as strong as ever" under the Taft-Hartley act (which he feels is not clearly understood as a law). Employers must still bargain with labor until an agreement is reached which is of benefit to both sides, and where difficulties arise, an outside arbitrator is called in. Both sides are bound by the law to abide by the decision reached.

### Urges Support of Associations

Don Dieterle, Ohio Sheet Metal Contractors' Association, answered the question, "Why are we here?" in the concluding speech. He described conventions as "a school to refresh our memories," and said that they help members adjust to competitive conditions by "re-charging" them in business practices. But members come not only for inspiration, but also information, he said. They come to gain knowledge that will help them "get on and up in the world."

He said the industry has every right to be optimistic because "the market is there," but stressed that dealers must go out after this business. "Selling and merchandising should be the theme for '54," he said.

In conclusion, he pointed out that associations are doing an excellent job in elevating the prestige of the industry.

At the banquet and annual dinner dance, scrolls were presented to three past presidents of the association: W. Ed Bogen, Robert Spragg and Philip C. Young. This practice had been discontinued, but was revived following recommendations made at last year's convention. In addition, inscribed plaques for outstanding service to the association were presented to William Orton, Clarence Christen, William C. Lumm and Don Dieterle.

It was announced that Cincinnati will be the host city for the association's convention in 1955.



# SHOW-HOUSE

Design inspired by the "Little White House", Augusta, Ga.



as seen in  
The Saturday Evening

# POST



## <sup>®</sup> Janitrol *Win-Sum* Twins



### *Selected for year 'round air conditioned comfort*

The Show-House four color, two page spreads appearing in The Saturday Evening Post featuring new and remodelled house plans are proving to be one of the hottest promotions of the year. Many thousands and thousands of readers are writing for Show-House plans and Janitrol literature on the Win-Sum Twins featured there. These reader-prospects are pre-sold and told how to reach a local Janitrol dealer for a new or replacement heating or summer cooling systems.

This is but one of the many Janitrol advertising and promotion programs to help Janitrol dealers "profit more in '54".

If you haven't talked to a Janitrol representative recently, now's the time to find out about Janitrol's newest achievements in product design and unmatched performance. Learn, too, how you can benefit now and in the future with Janitrol year 'round conditioning.

So, don't sit on the sidelines, tie up with America's most advanced manufacturer . . . profit more from better products, and better sales and installation training.

Your letter will bring a prompt response on the availability of Janitrol dealer representation in your community.



## JANITROL DIVISION

SURFACE COMBUSTION CORPORATION • 400 DUBLIN AVE., COLUMBUS, OHIO

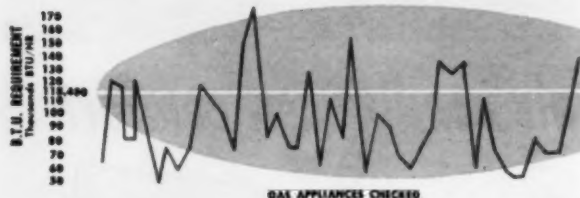
AMERICAN ARTISAN, APRIL 1954

## CHECK THIS FOR SIZE

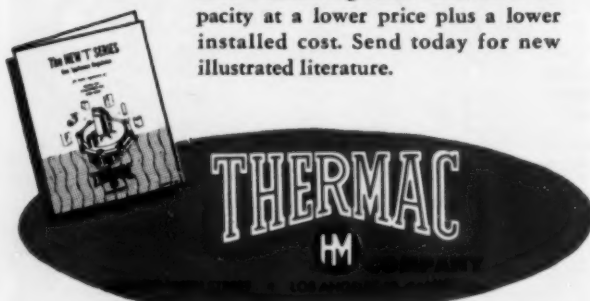


Greater BTU capacity per size, extremely accurate pressure control plus a lower cost unit are outstanding advantages of Thermac Regulators. Take the new 1/2" "T" Series for example. This regulator with a capacity of 118,400 BTU measures only 3-9/16" in width. Other sizes are proportional ranging in capacity from 9000 to 1,398,600 BTU.

Scores of appliances produced by American manufacturers as charted below actually determined the specific sizes of our various models. In other words, we built a regulator to meet appliance requirements, something seldom done.



The octagonal shape makes installations in tight spots a cinch. We have also added vise grip bosses to aid assembly. Then too, the cover vent may be tapped to receive your particular connection thereby eliminating need for extra fittings. In the new "T" series you have a small regulator with more capacity at a lower price plus a lower installed cost. Send today for new illustrated literature.

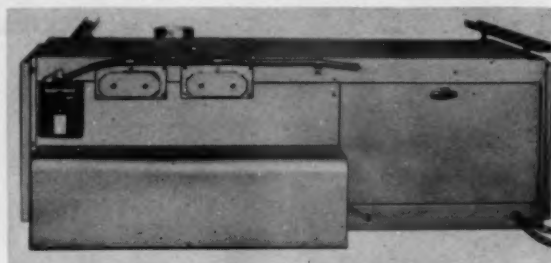


"Over 20 years' experience in building gas controls"

## EQUIPMENT DEVELOPMENTS —

(Continued from page 121)

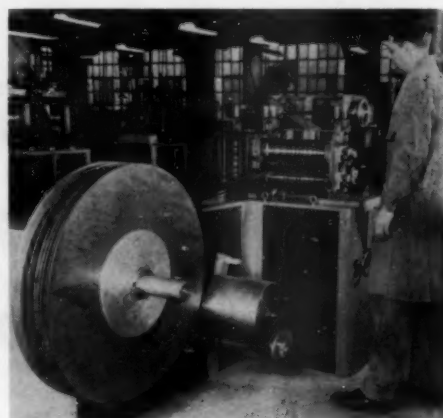
Hanger brackets, provided on top of the cabinet, are removable so that they can be placed on the bottom of



the unit for base mounting. Standard equipment includes a thermostat, pressure regulator (except LP models), etc. The unit is pre-assembled and pre-wired.

### Slitting Machines for In-Plant Use

SLITTING MACHINES designed for in-plant slitting of all types of coils and sheet metal — Stanat Mfg. Co., 47-30 37th St., Long Island City 1, N. Y. Parts are standardized and interchangeable, and the machines are designed to be low in cost. The slit coils are wound on



core plates, and the recoiler is unit-mounted on the slitter base at a sufficient distance from the cutters to minimize the camber effect of "fan-out," the company states. Model S-180 has a basic arbor size of 2 1/2 in. diameter and will handle coil widths of 8, 12, 18 and 24 in. Model S-350 has an arbor diameter of 3 1/2 in. Larger diameter arbors are available.

### Continuous Air Diffusers

CONTINUOUS AIR outlets added to the line of "Agitair" air diffusers — Air Devices Inc., 185 Madison Ave., New York 16. The outlets incorporate special diffusing vanes and are designed for noiseless, draftless distribution of conditioned air over a predetermined area. They are available in unlimited run dimensions for either side-wall or ceiling installation, and in two types — with separate mounting frame and interchangeable diffusing core or with integral diffusing core.



# New Chevrolet Trucks

deliver hour-saving power  
that saves you money, too!



New Chevrolet trucks bring you great new engine power in every model—from light-duty pickups to heavy-duty tractors. And this new power means important savings of both time and money on the job!

## YOU SAVE TIME WITH GREATER SAFETY

That's because new Chevrolet trucks permit you to maintain faster schedules *without* driving at higher maximum road speeds. Thanks to greatly increased acceleration and hill-climbing ability, you can save time where it counts. Instead of trying to make up for lost time, you actually cut down the time lost at traffic lights and on steep grades.

## YOU SAVE PLENTY ON OPERATING COSTS

New Chevrolet trucks bring you high-compression power that saves you money every mile. All three great

engines—the "Thriftmaster 235," the "Loadmaster 235" and the "Jobmaster 261"\* deliver greater horsepower *plus* increased operating economy. In addition, the mighty "Jobmaster 261" engine reduces the need for operating in low gears on heavy-duty jobs. As a result, you shift gears less . . . save more on gas.

Now's a good time to see your Chevrolet dealer about a time-saving, money-saving truck. . . Chevrolet Division of General Motors, Detroit 2, Michigan.



**MOST TRUSTWORTHY TRUCKS  
ON ANY JOB!**

## CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

**THREE GREAT ENGINES**—The new "Jobmaster 261" engine\* for extra heavy hauling. The "Thriftmaster 235" or "Loadmaster 235" for light-, medium- and heavy-duty hauling. **NEW TRUCK HYDRA-MATIC TRANSMISSION\***—offered on ½-, ¾- and 1-ton models. Heavy-Duty **SYNCHRO-MESH TRANSMISSION**—for fast, smooth shifting. **DIAPHRAGM SPRING CLUTCH**—improved-action engagement. **HYPOID REAR AXLE**—for longer life on all models. **TORQUE-ACTION BRAKES**—on all wheels on light- and medium-duty models. **TWIN-ACTION REAR WHEEL BRAKES**—on heavy-duty models. **NEW RIDE CONTROL SEAT\***—eliminates back-rubbing. **NEW, LARGER UNIT-DESIGNED PICKUP AND PLATFORM STAKE BODIES**—give increased load space. **COMFORTMASTER CAB**—offers greater comfort, convenience and safety. **PANORAMIC WINDSHIELD**—for increased driver vision. **WIDE-BASE WHEELS**—for increased tire mileage. **BALL-GEAR STEERING**—easier, safer handling. **ADVANCE-DESIGN STYLING**—rugged, handsome appearance.

\*Optional at extra cost. Ride Control Seat is available on all cab models, "Jobmaster 261" engine on 2-ton models, truck Hydra-Matic transmission on ½-, ¾- and 1-ton models.

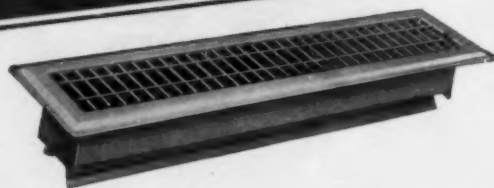
# Directed Air Flow

Modern Perfecter Heating

## INDEPENDENT

*"Fabrikated"*  
REG. U. S. PAT. OFF.

## FLOOR REGISTERS



No. 60A—Bars may be set to direct air flow up or to both sides.

● Register faces of the famous "Fabrikated" construction excel in rigidity, open area and attractive appearance. When valves are set in correct position, an adjusting screw permits directing the air flow to the outside wall.

These floor registers are made in seven standard sizes to fit openings  $2\frac{1}{4} \times 14$ ; also from  $4 \times 10$  to  $6 \times 14$  with free air areas of 29 to 62 square inches. All sizes fully comply with code requirements of N.W.A.H. and A.C.A.

**Write for complete catalog**

**Always Leading — Always Progressing**

\*Reg. U. S. Pat. Off.

### THE INDEPENDENT REGISTER CO.

3747 E. 93rd STREET • CLEVELAND, OHIO

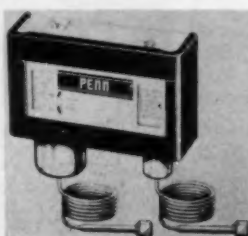


## equipment developments . . .

(Continued)

### Furnace Cleaner Attachments

CHIMNEY CLEANING tools and attachments for the Model P-908F heavy duty furnace cleaner — Premier Co., 755 Woodlawn Ave., St., Paul 1. The complete set of attachments includes a flue brush with a 9 in. head, duct brush with a 10 in. head, eight 4 ft extensions, a soot shield and a crank. When the flue brush is inserted through the basement chimney opening, the opening is sealed shut with the soot shield and the cleaner hose is attached to the shield's circular opening. After the cleaner has been turned on, the crank is placed on the end of the flue brush and rotated slowly to loosen soot deposits. Suction action then pulls loosened soot out of the chimney and deposits it in the cleaner's container. The cleaner, powered by a 1 hp motor, has an air flow rate of 70 cfm.



Above: Control



Right: Cleaner Attachments

### Dual Pressure Control for Cooling

DUAL PRESSURE refrigeration control, with lockout requiring manual reset on both high and low pressure — Penn Controls, Inc., Goshen, Ind. Designed as a safety control for all mechanical cooling uses, it is specifically recommended for hermetic units for air conditioning. The control is available in either single pole standard duty or double pole heavy duty types, and for systems using either "Freon-12" or "Freon-22." Both types incorporate screwdriver adjustment and direct-reading calibrated scales. The "F-12" controls have a low pressure cutout range of 20 in. to 50 lb, and a high pressure cutout range of 100 lb to 240 lb; the other model has a low pressure range of 20 in. to 80 lb, and a high pressure range of 175 lb to 375 lb.

### Light Duty Exhaust Fan

MODEL BG light duty exhaust fan designed for use in kitchens, offices and small commercial establishments — Chelsea Fan & Blower Co., Inc., 639 South Ave., Plainfield, N. J. The fan is four-bladed, has a two speed semi-enclosed motor and is offered complete with guard, switch, cord and plug. It is unusually quiet in operation, the company states, and can be operated satisfactorily with an automatic louver. The fan frame consists of a heavy square panel without flanges, affording flush mounting of the fan against the discharge opening in

# Sell year 'round comfort

with Iron Fireman  
Heating and Cooling Equipment



With the Iron Fireman line on your sales floor you can fill all heating and cooling needs with *quality* equipment, and you will be backed up by all-year advertising, sales helps and engineering assistance.

## Real selling points that are DIFFERENT

The high quality of Iron Fireman equipment is apparent at a glance—heavier gauge steel, sturdier parts, superior finish. It is packed with exclusive features for **REAL CREATIVE SELLING**. For example, you get a hint of the Iron Fireman radiant fire story in the paragraphs below. Other advanced engineering features pay off in long life, trouble-free service and exceptionally low fuel bills.

It will pay you to write now for full information regarding the Iron Fireman dealer franchise and the highly salable line of Iron Fireman heating and cooling equipment.



### WINTER AIR CONDITIONER

Available in both highboy and low-boy models and in a wide range of sizes. Warms, cleans, humidifies and circulates the air.

OIL and GAS



### SUSPENSION OIL FURNACE

Forced warm air furnace stows away in attic or crawlway or hangs overhead in basement, garage or utility room.



### SELECTEMP

Revolutionary new heat-system with thermostat in every room. Room heating unit is only 18 inches high.



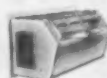
### VORTEX OIL BURNER

Vortex conversion burner with whirling, bowl-shaped flame.



### RADIANT GAS BURNER

Most efficient conversion burner, for all types of fuel gas, including L.P.



### ROOM COOLING

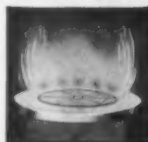


CENTRAL COOLING  
Cooling units in both of these popular types give you a wide market.

## The famous Iron Fireman RADIANT fire



**OIL** The Iron Fireman Vortex oil burner is *different* and *better*. Radiant, bowl-shaped flame blankets the heat reflecting hearth and applies heat where it counts. Very fast response, low oil consumption.



**GAS** The Iron Fireman Radiant gas burner, with heat reflecting hearth, makes intense radiant heat on the same principle as an incandescent gas mantle. Reaches top operating efficiency in a few seconds.

Write for more  
information

**Iron® Fireman**  
MANUFACTURING COMPANY

3107 W. 106th Street  
Cleveland 11, Ohio

# OHIO VALLEY PRECISION MADE FURNACE PIPE and FITTINGS



## OHIO VALLEY

**STANDARDIZED  
PIPE and FITTINGS  
SAVE MONEY  
BY SAVING TIME**

**CARRIED IN STOCK BY LEADING  
WHOLESALEERS**

*Write for our Catalog.*



**Ohio Valley Hardware & Roofing Company**  
METAL MANUFACTURING DIVISION, EVANSVILLE, IND.

## equipment developments . . .

(Continued)

the wall. Sizes available for this UL approved unit are 12, 16 and 20 in., with certified air ratings of 1000 to 2600 cfm.

### Furnaces

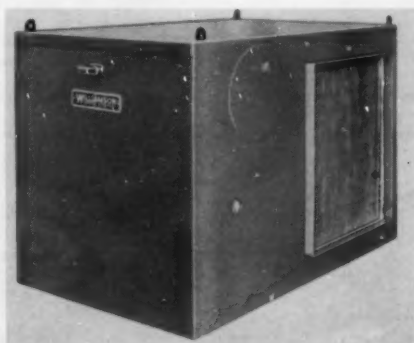
SERIES WO "Victor" oil burning furnace and "Halco" lowboy furnace — Hall-Neal Furnace Co., 1326 N. Capitol Ave., Indianapolis 7. The first is a convertible oil or gas air conditioner with a new casing design. Two sizes are available for both gas and oil, rated



at 100,000 and 120,000 Btu and 84,000 and 95,000 Btu, respectively. The lowboy furnace (illustrated) is designed for compactness and is recommended by the manufacturer for use in shallow basement homes. It is 42 in. high, 45 in. wide and 22 in. deep. Rating is 80,000 Btu with either gas or oil. The large filter compartment is accessible from either side or back.

### Horizontal Space Cooler

HORIZONTAL SPACE COOLER for installation over or under joists, designed for use with furnace blowers — Williamson Heater Co., 3500 Madison Rd., Cincinnati 9. It can



be installed in crawl or attic space with under-the-floor perimeter or above-the-ceiling forced warm air furnace systems. Easy installation and simplified maintenance are featured, the company states. The unit is shipped



# Attractive, Rugged HARDWARE by NATIONAL LOCK

**FOR HEATING AND AIR  
CONDITIONING EQUIPMENT**



(LEFT)  
61-207 HANDLE

(RIGHT)  
61-366 HANDLE

Latch spindle regularly supplied 1½" long. Can be supplied in ½ to 3" lengths in ¼" variations. Escutcheon is pierced for No. 6 Round Head Screws on 1½" centers. Finished in Bright Zinc or Bright Chrome... other finishes on special order. Look to NATIONAL LOCK for hinges, catches, strikes and screws, too.

## Special Fasteners

**That Save Time, Labor, Materials**



In addition to providing all types of standard fasteners, NATIONAL LOCK designs and makes special-purpose fasteners for specific jobs. Let our skilled sales engineers recommend fasteners that will effect important savings in your production.

If you are an original equipment manufacturer or jobber, write us. If you are a dealer, see your jobber.

### NATIONAL LOCK....

market basket for industry  
SCREWS • BOLTS • HANDLES  
PULLS • CATCHES • HINGES



**NATIONAL LOCK COMPANY**

ROCKFORD, ILLINOIS

# The NEW 1954 WALKER *Automatic* DRAFT REGULATORS

This New 9-Star Performer  
**SPEEDS REPLACEMENTS**  
and NEW INSTALLATIONS



The NEW L-CD

with quick clamp screw cuts inside

## Here is Draft Control as perfect as possible

And Walker now offers its L-CD with a longer collar. This feature keeps the damper out of the gas stream for better performance. Now the assembly of collar and control saves time on the job. And you can see for yourself how it enhances Walker sales appeal.

With new 1954 models, Walker, as always, offers a complete range of sizes of automatic draft controls. There is a Walker Fuel-Saver for every conventional heating use. More than 13 million sales bespeak fool-proof and long-lived service with all applications. See your jobber or write us.

### The First

handbook for industrial installations is published by Walker! Full of "how-to" and "where-to" information—with plenty of tips for profit. Send for your FREE copy today!



## Check These 9 POINTS

- 1 EASE OF ADJUSTMENT with exclusive patented pointer and calibrated dial.
- 2 BOX TYPE HINGES with sealed protection against corrosion, dirt and dust.
- 3 BALANCE PLATE — scientifically designed to maintain proper balance.
- 4 SPECIFIC PIPE SIZES—insure correct capacity for every type of installation.
- 5 ALUMINUM FRAME — rigid, long lasting.
- 6 EASE OF INSTALLATION—collar and slab for quick attachment.
- 7 ALUMINIZED STEEL—for heat and corrosion resistance.
- 8 FACTORY SET—for "performance as perfect as possible."
- 9 FREE FLOW of air in unrestricted inside area.

## WALKER

### VENTURI-TOP CHIMNEY CAP

Recommended as ideal for both heating and ventilating applications. Just the device to solve problems of down draft and poor draft. Economical...easy to install...attractive in appearance. Available immediately in sizes from 3" to 8"

**WALKER MANUFACTURING & SALES CORP.**  
1730 Penn Street St. Joseph, Mo.

Where is it?



There's a better place

for heating with the

Norman Southerner



It's in the crawl space



the MOST  
COMPACT  
horizontal  
forced-air  
gas furnace

Do your customers want more room for living? Sure they do! Then why not show them how simple it is to get that extra floor space.

Take the heating system out of the closets! Give them more room for living... greater heating comfort with the Norman Southerner.

You'll be doing your builder a good turn when you install the flexible Norman Southerner in his new home. Adaptable to any location!

Of course, when you're called for advice or remodeling, it's good to know you can install the Norman Southerner... in the attic or under the crawl space without major alterations. Saves on installation and ductwork.

The constant flow of forced warm air from the Norman Southerner gives your customers a central heating system that provides real "hidden comfort" throughout the long heating season.

Sizes for all heating requirements. AGA approved for all gases.

Norman 360

gas-fired overhead forced convection heater.

Comfort in overhead heating, with "circular" heat distribution. No hot blasts... no cold corners.



the beauty is

Built In

Streamlined circular design blends with modern commercial interiors. Completely automatic... concealed controls... simplified venting. Write for specifications.



Manufacturers of a Complete Line of Gas Heating and Air Conditioning Equipment

Norman

products company

1150 Chesapeake Ave., Columbus 12, Ohio

PRE-SOLD to Builders and Architects in National Advertising.



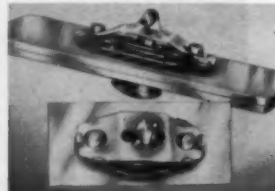
## equipment developments...

(Continued)

in one section with no special moving equipment needed. It requires 5.4 sq ft of base area. Completely automatic, the cooler provides both cooling and dehumidification, is available in 2 and 3 ton sizes.

### Sheet Metal Fastener

"HI-STRENGTH" Model HO sheet metal fastener designed for rapid locking and opening — Lion Fastener, Inc., Honeoye Falls, N. Y. No larger than the standard No. 5 fastener, it is a one piece stud without cross pins, milled sections or holes. It locks with a quarter turn clockwise and unlocks in the opposite direction. The unit is self-contained and cannot come apart, the company states. Strength characteristics are: shear load, 4750 lb; tensile strength, 3000 lb; sheet separation, zero; lock torque, 8.5 in.; and unlocking torque, 6 in., range of stud, 0.03. The bearing surface has been redesigned so that the shear load is distributed evenly around the area of the fastened parts.



Above: Fastener

Left: Electronic Control

### Electronic Heating-Cooling Control

ELECTRONIC HEATING-COOLING control for use in commercial buildings — Minneapolis-Honeywell Regulator Co., 2726 4th Ave. S., Minneapolis 8. The control combines an electronic relay with the company's "Modutrol" motor in one unit, reducing costs, the company states. The unit is suitable for use in relatively simple heating-cooling installations requiring only one indoor thermostat and an outdoor thermostat mounted either outside the building or in the outside air intake. It can also be used in large zoned systems where signals from several electronic thermostats must be coordinated by the relay to actuate the motor valve or damper. In either type of installation, the unit is designed to adjust temperature according to changes in outside weather as well as such factors as changes in the occupancy of the building, and prevalence of winds, sunlight or shade.

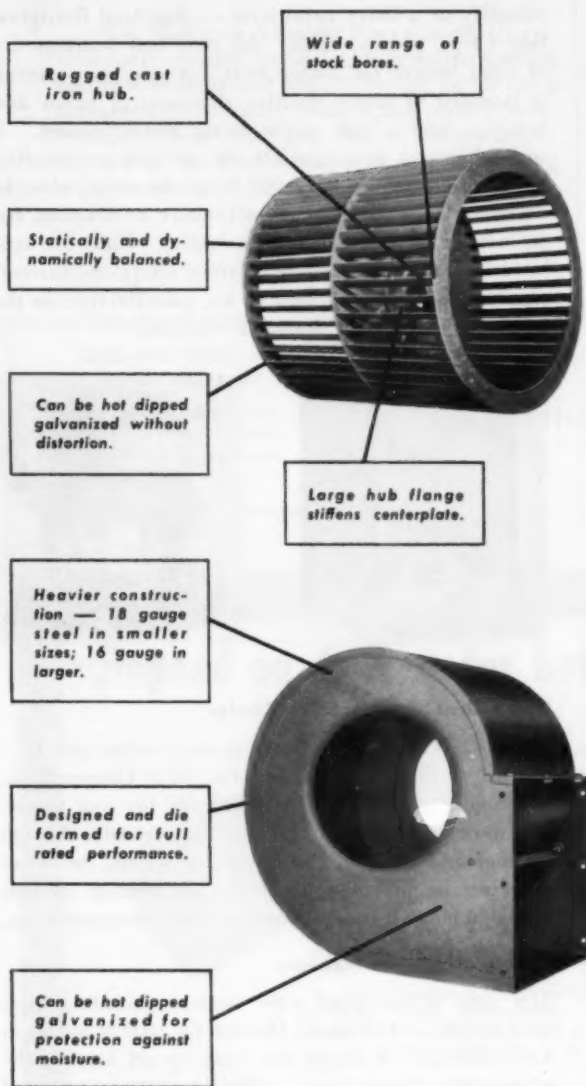
### Electric Metal Cutting Band Saw

MODEL 524 completely portable electric metal-cutting band saw — Porter-Cable Machine Co., 1714 N. Salina St., Syracuse 8. It weighs 16 lb, is slightly larger than a hand hack saw, the company states. It can be used

**MEMO**

for  
Air Conditioning  
Unit Manufacturers

## CLARAGE Type DF Fan Equipment is worth thousands of dollars to your sales department



You, too, will profit by using Clorage Type DF fan equipment. Here is equipment of **KNOWN** quality . . . it has proved its worth to numerous manufacturers of air conditioning units, evaporative condensers, cooling towers, circulators, etc.

Wheels, housings, or complete fans are available. Thorough engineering and heavier construction distinguish Clorage equipment. Results: full rated performance and trouble-free operation.

To obtain complete information, including dimensions and capacity ratings, use coupon below.

### COMPLETE FANS

Type DF fans are built in 11 sizes with capacities ranging from 200 to 10,000 CFM. Special units for higher pressures and more severe services can be furnished.



#### CLARAGE FAN COMPANY

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☐ Please send me your catalog on Type DF Fan equipment.

☐ Please have your nearest sales engineer contact us.

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ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

You can Rely on...

# CLARAGE



Headquarters for  
Air Handling and  
Conditioning Equipment

SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES • IN CANADA Canada Fans, Ltd., 4285 Richelieu St., Montreal



# Now a Mueller Climatrol



**You sell a famous,  
nationally-advertised  
brand name!**

**You offer the  
plus value of  
Mueller Climatrol  
design advantages!**

**Sized right**  
— has 1.6 bushel capacity  
to handle big-family  
garbage and trash.

**A.G.A. approved**  
— for continuous operation.  
**Handsomely designed**  
— available in standard  
gray or deluxe white models.

**Easy to install**  
— shipped assembled.  
Simply install flue and  
run gas line to unit.

**Trouble-free**  
— once installed, unit  
requires no servicing.  
Light and forget — no  
moving parts.

**Burns anything**  
— except metal or glass  
— including rinds, peach  
pits, old shoes, paper,  
vacuum-cleaner dirt, corn  
cobs and magazines.

**MORE** profits from Mueller Climatrol are coming your way — all year 'round. For now Mueller gives you something new to sell — the Mueller Climatrol Incinerator. It's handsomely styled and attractively priced, to give you the jump on competition in the big, year 'round home-incinerator market. And it sells in the months when your regular heating business is apt to be slow.

But that's not all — you profit another way, also: Every sale of a Mueller Climatrol Incinerator is a "door-opener" that helps you uncover new prospects for Mueller Climatrol heating and air-conditioning equipment.

Yes, sir, the Mueller Climatrol Incinerator offers a double-barreled volume-building opportunity you can't afford to pass up. Get the whole story now, by mailing the coupon below.



**Mueller Climatrol**

For money-making details, tear out coupon and mail today!

## MUELLER CLIMATROL

2030W W. Oklahoma Ave., Milwaukee 15, Wisconsin

*The Mueller Climatrol Incinerator sounds like more money in the bank for me. Send more information.*

Name

Company

Company Address

City  State

D-1340

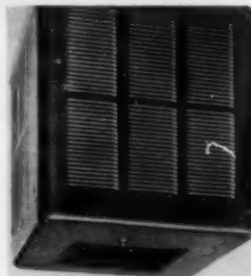
## equipment developments . . .

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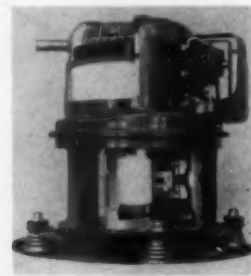
free-hand in any position, and has a stock cutting capacity up to 3¼ in. × 4¼ in. It can be used on ferrous and non-ferrous metals, plastics, etc.

### Motor-Compressor for Window Conditioners

TWIN CYLINDER type welded, hermetic motor-compressors for window air conditioners, designed to run more smoothly at a lower noise level — Copeland Refrigeration Corp., Sidney, Ohio. All rods and bearings are of solid bronze for longer wear. A one piece casting is intended to insure positive alignment of motor and bearings, and a high power factor motor is used. A cork alignment ring controls the air gap surrounding the motor to reduce noise, yet keeps the motor close to the shell, permitting fast heat transfer to overload for positive protection, the company states. Units are supplied in four sizes. Motor starting relays are current-type on the ½ hp and light ¾ hp, potential-type on the heavy ¾ and 1 hp. "Freon-12" is used.



Cooler



Motor-Compressor

### Down-Draft Evaporative Cooler

NEW 4000 CFM bottom discharge evaporative cooler — Thermador Electrical Mfg. Co., Inc., 5119 District Blvd., Los Angeles 22. Designed specifically for roof mounting, where it is desired to direct air vertically through the roof into a central hall or ducting system, the cooler offers maximum intake of filtered air through all four sides and blows it straight downward, the company states.

### Packaged Water Heaters

NEW LINE of packaged water heaters, including glass lined models — Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago. Featured are wrap-around heating elements using "black heat." Models also are equipped with adjustable automatic thermostats.

### Packaged Air Cooled Conditioner

MODEL 1205 5 hp air cooled "packaged" air conditioner for residential and commercial use — Airtemp Div., Chrysler Corp., 1600 Webster Ave., Dayton 1. The unit measures 58 in. wide, 35 in. high and 28 in. deep. Applicable especially to larger homes (in areas where water supplies are inadequate or costly), the unit may be installed in utility rooms, basements, breezeways, garages



# When you need a heating system for Lodge Buildings • Churches • Retail Stores • Small Factories Large and Small Homes

## THINK FIRST OF

## Majestic

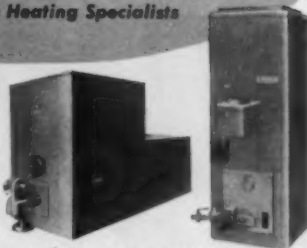
OIL AND GAS FURNACES  
*Engineered by Heating Specialists*

... Sell Majestic's complete line of warm-air systems for convection, panelaire, or perimeter heating needs, both large and small—backed by almost a half-century of furnace research and development!

Majestic now offers you over 30 models in gas, oil, and LP gas-fired furnaces, in sizes for heating requirements of 80,000 to 400,000 BTU.

Typical of this line is the Model 236-2 illustrated at right—one of the larger double-radiator, completely automatic forced-air units suited to 400,000 BTU jobs.

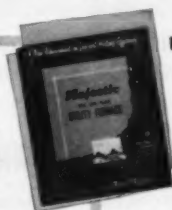
Shown at far right is Model DF-26—one of a series of small, space-saving down-flow and upflow units—a series that wins wide favor as a quality, low-cost heating plant for basementless houses. Ideal for perimeter, panelaire, or convection systems in old or new installations.



Now Available . . . Summer Air Conditioning on ALL Majestic Units!

SEND FOR THESE  
INFORMATIVE BULLETINS

and learn about the many other valuable features of Majestic's complete line of easy-to-sell heating units.



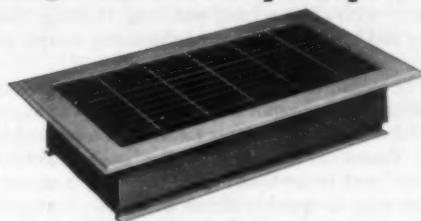
## The Majestic Company, Inc.

394 Erie St., Huntington, Indiana

## Depend on A & A for better registers every day...



Developed  
by  
George G. Auer



### No. P-28 PERIMETER DIFFUSERS

A new popular style register for concrete slab, basementless type home installation. Designed so that air is diffused efficiently in a 100° arc.

Order in neutral Metallic or blended Oak Finishes.

### No. F-20 FLOOR REGISTERS

Here is a strong and durable floor register that's designed to please the most discriminating home owner and the most exacting home builder.

Now available from our stock in three types of finishes, Metallic, Prime, or Oak.



Your best buy  
every time

Write for your copy of the A&A Register Catalog 53 for sizes and prices of all of the styles in our Complete Line of wall and floor registers.



# THE A & A REGISTER COMPANY

8327 CLINTON RD. CLEVELAND 9, OHIO

# Now — go to town with the **ALL-TITE VANE RUNNER**

TRADE MARK

**Quickest, cheapest way to install vanes  
in square elbows**



Blades are cut raw from your scrap... double blades formed with flanges as shown above. Units can be stacked for extra height, overlapped for additional length.

THEY'RE LEARNING the same thing in shops all over the country... that the *Elgen All-Tite Vane Runner* literally slashes the cost of fabricating and installing turning vanes. The *All-Tite Vane Runner* does away with all punching, notching, riveting, spot welding and layout... *requires absolutely no special chisels or tools!*

The new, improved *Elgen All-Tite Vane Runner* is made of 24-gauge galvanized steel. It is engineer-approved and accommodates either single or double blades. Vanes are locked into the unique slotted knobs in "next to no time" with shears or hammer. Finished unit is quickly fitted in elbow, fastened with screws, and is perfectly rigid and rattleproof.

The *Elgen All-Tite Vane Runner* comes in 8-ft. strips, 20 per bundle. Order from your jobber and, if necessary, ask us for your quickest source of supply. And write for the whole story, plus engineering data.

**Elgen Manufacturing Corporation**  
Dept. A-4, 41-34 39th Street  
Long Island City 4, N. Y.

PAT. PEND.  
UNION  
MADE



A. F. of L.

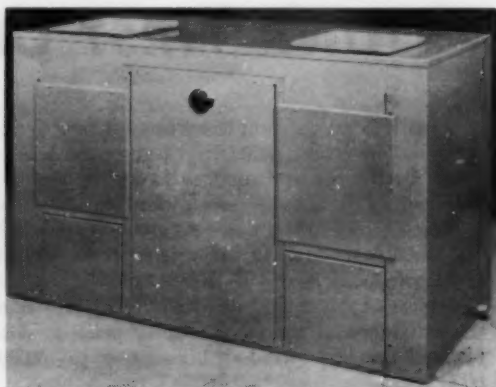
**ELGEN**  
**ALL-TITE VANE RUNNERS**

FASTEST — MORE PRACTICAL AND ECONOMICAL

## equipment developments...

(Continued)

or outside the home. It is designed for use with any one of six evaporator coils or evaporator-coil-blower assemblies. Condenser blowers may be rotated 90 deg



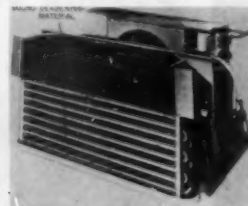
for air discharge through either the side or top of the unit. All necessary controls are wired and built in at the factory.

### Room Air Conditioners with Sound Deadener

"ELECTROMAGNETIC" automatic room air conditioners for 1954, with the discharge plenum or duct completely covered with hair felt to minimize noise — Fresh'nd-Aire Div., Cory Corp., 221 N. LaSalle St., Chicago 1. Both the hair felt and sheathing felt (used on the bulkhead and elsewhere) are sound absorbent and sound deadening material.



Unit Heater



Air Conditioner

### Oil Fired Unit Heater

MODEL UH-220 unit heater, fired with a conventional gun type oil burner — The Certified Furnace Corp., P.O. Box 1059, Trenton 8, N. J. It is designed for applications where large air volume is required. There is vertical flue travel, permitting the products of combustion to be exhausted into the atmosphere through a short flue pipe. Burner and flue outlet can be attached to either side of the heater. Hooks are provided for suspension and four bolt holes are furnished for attaching the heater to a portable platform. Louvers in the front are adjustable to vary direction. Heat output is 220,000 Btu per hr with a 2 gph nozzle. A large 1/2 hp propeller fan and motor will throw heated air for an effective dis-

## equipment developments . . .

(Continued)

tance of 50 to 75 ft, and air delivery is rated at 5730 cfm. The unit weighs 390 lb.

### Lowboy Winter Air Conditioner

MODEL SH lowboy steel furnace available in five sizes for a wide range of warm air heating needs — Richmond Radiator Co., Box 111, Metuchen, N. J. Features include a stainless steel, chromium alloy combustion chamber with a heavy 12 gage heating element. The unit is gas or oil fired, with fully automatic operation. All controls are enclosed and units have a raised steel base to eliminate the need for grouting and to permit installation on combustible floors. The filter area is unusually large, according to the company. Oil fired units have UL listed pressure atomizing burners said by the manufacturer to comply with commercial standard CS-75. The gas fired units are AGA approved for use with all types of gases. Gas fired inputs range from 85,000 to 220,000 Btu per hr, and oil fired outputs range from 80,000 to 212,000 Btu per hr.

### Coal Fired Furnace and Space Heater

MODEL F 10-B coal fired furnace, with bin feed or hopper feed as standard, and a coal fired space heater with stoker, hopper, blower, heat exchanger, controls, ash container and accessories completely enclosed in the jacket — Eddy Stoker Corp., 4711-4721 W. North Ave., Chicago 39 (by agreement with Stokermatic Co., Salt Lake City). Both units are of stainless steel construction and have a floating feed screw designed to allow most foreign objects to feed through the tube without stalling the stoker. The furnace has a heating capacity of 80,000 Btu and a coal feed rate of 10 lb per hr. Two large horizontal flues through which the air circulates are intended to give additional heating surface. Stoker, furnace and blower are factory installed in one cabinet. There is a built-in clinker pan. The space heater, designed for small homes, has a heating capacity of 65,000 Btu and a coal feed capacity of 8 lb per hr. It utilizes a pressurized coal hopper and the steel heating unit is refractory lined.

### Winter and Summer Conditioners

"MAGIC-AIRE" winter and summer conditioning units in 24 new models — Magic Chef, Inc., 1641 S. Kingshighway Blvd., St. Louis 10. There are five gas horizontal winter conditioners ranging in size from 60,000 to 140,000 Btu; five gas high-lowboy winter conditioners in the same capacity range; three gas counterflow winter conditioners, ranging in capacity from 80,000 to 120,000 Btu; three high-lowboy oil and three counterflow winter conditioners ranging in size from 85,000 to 130,000 Btu; one 3 ton residential summer conditioner; one 3 ton small commercial summer conditioner; and three conversion type burners, two in gas and one in oil.

## You'll save up to 50 per cent with the new **SILENT DUCT**

TRADE MARK

Pre-assembled metal and material  
pulls out flat and ready to use



LET'S PUT IT THIS WAY...you need some flexible duct connections. As the first step, you attach canvas or asbestos to strips of metal...a job that takes time and costs money. In shop after shop 50% to 60% is being saved today by using *Elgen Silent Duct*, the new connection material that comes to you pre-assembled for immediate fabrication.

*Elgen Silent Duct* is delivered in 100-foot (approx.) coils in a handy dispenser...pulls out absolutely flat and ready to use. It is made of 24-gauge galvanized steel, fastened to your choice of fire, water and mildew-resistant canvas (Govt. Spec. MIL-D-10860) or to heavy, top quality asbestos.

Order *Elgen Silent Duct* from your jobber and make savings that really help you get business. If necessary, ask us for your nearest source of supply. And write us for new free folder that tells the whole *Silent Duct* story. **Elgen Manufacturing Corporation, Dept. A-4, 41-34 39th St., Long Island City 4, New York.**

PAT. PEND.  
UNION  
MADE



A. F. of L.

# ELGEN SILENT DUCT

SAVES ASSEMBLING CONNECTION MATERIALS





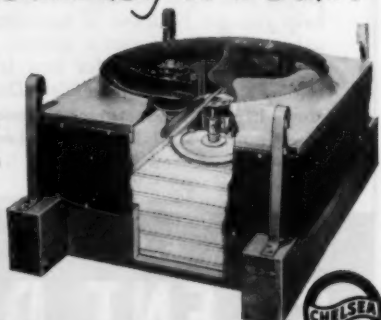
# CHELSEA ATTIC FANS

*...Help You Profit by the  
"Trend Toward Comfort"*

... Built-in air cooling is the low cost 'extra' that adds tremendous sales appeal to new homes ... You can quickly and easily install a Chelsea Attic Fan in either ceiling or attic wall—everything needed to do the complete installation is included in one package ... Chelsea Attic Fans, approved for FHA financing, can also be included in your home modernizing contracts for extra profits ... Models are available to efficiently cool homes of any size while Chelsea's Underwriters Approval, Certified Ratings and 5 year guarantee protect you.

*Low in Cost...Easy to Install!*

Chelsea's patented  
spring mounting  
insures quiet,  
vibrationless service  
... Gives complete  
customer satisfaction



**CHELSEA FAN & BLOWER CO., INC.**

PLAINFIELD • NEW JERSEY

MANUFACTURERS OF INDUSTRIAL & HOME VENTILATING EQUIPMENT

## equipment developments . . .

(Continued)

### Central Unit for Cooling Part of Home

AIR COOLED UNIT for basement, attic or utility room installations, which (by means of ductwork or a plenum space) is designed to air condition the two, three or four rooms used most in a home — Remington Corp., Auburn, New York. Three models are offered, in 1, 1½ and 2 hp sizes. The unit is designed to keep equipment and installation costs to a minimum and to avoid cutting and patching of walls and structural members.

### Oil Fired Forced Draft Space Heater

MODEL M-824 forced draft space heater designed to comply "with all the newest UL specifications" — Perfection Stove Co., 7609 Platt Ave., Cleveland 4. A triple safety control with a reset lever shifts to manual operation if power goes off, then moves to fully automatic operation when current is restored. Featured is the "Dynadraft" which supplies its own draft to the burner, the company states. The blower control is designed to tailor the amount of warm air circulated to the amount of heat coming from the burner. Capacity of the heater is 80,000 Btu.

### EQUIPMENT BRIEFS

NEW MODELS in wall and ceiling kitchen ventilating fans featuring one piece grilles mounted with neoprene rubber grommets and single-threaded nose pieces — Miami-Cabinet Div., The Philip Carey Mfg. Co., Middletown, Ohio. Models require a minimum of assembly time, the company states. There is a "snap-in" type assembly on the propeller and motor unit intended to facilitate cleaning. Available are 8 and 10 in. through-the-wall ventilators and a 10 in. combination wall and ceiling fan.

"HANDY ANGLE" saw for cutting intricate patterns in sheet metal, which can be used on iron and other types of materials as well — Price & Rutzebeck Co., P.O. Box 30, Hayward, Calif. It weighs less than 1½ lb, and is less than 7 in. long, including the blade. The tool operates on standard ¼ in. electrical drills, geared at any speed from 1800 to 3500 rpm, and mounting at a right angle for work in close quarters.

No. 590.5 SEAM SEALER extruded in tape form as thin as 0.020 in. and in beads as small as ¼ in. in diameter — Presstite Engineering Co., 3798 Chouteau Ave., St. Louis 10. It is non-volatile, combines special plasticized material and asbestos fiber. It has good adhesion to metals, plastics, glass and wood, the company states.



# NOW



**A CEILING OR WALL  
VENTILATOR THAT GIVES YOU**

**LOW PRICE**

**APPEARANCE**

**QUIETNESS**

**PERFORMANCE**

The new low-cost Trade-Wind Axial Flow Ventilator now makes it possible to use either wall or ceiling installation with the same unit of this revolutionary new ventilator. The unit can be installed between joists in the ceiling or between studs in the side wall.

The Trade-Wind gives you straight-through axial air flow plus super-powered suction. And it sells at a low, low price which makes kitchen ventilation a must even in the most economically designed house. And it's so good looking! Styled by a top industrial designer, the Axial Flow adds a new distinctiveness to every kitchen.

**FOR  
CEILING  
INSTALLATION**

**FOR  
WALL  
INSTALLATION**

Write or wire  
for complete details today.

The optional backdraft damper, shown at left, and wall cap, shown above, are interchangeable and make the Axial Flow the most versatile ventilator on the market.

**Originated by  
TRADE-WIND MOTORFANS, INC.**

5717 S. MAIN ST., LOS ANGELES 37, CALIF.

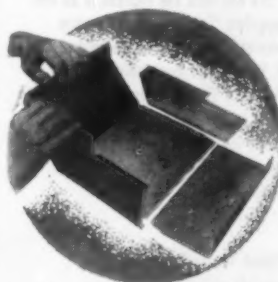
## SAVE SPACE...

with **DUC-PAC** knocked-down Duct Fittings



DUC-PAC galvanized fittings are shipped knocked-down, packaged 12 to a carton . . . only require about 10% of the space needed to store old style fittings. They save space in your truck, too.

Because they're snugly packed in cartons, DUC-PAC galvanized fittings don't become dented or battered in storage or in the truck. Eliminating this waste keeps your costs down . . . your profit margin up.



They snap together in a matter of seconds. DUC-PAC's exclusive internal snap lock eliminates any "folding over" operation. No hammer necessary . . . appearance of finished job is improved.


Request free descriptive bulletin showing complete line.



**DUC-PAC**

DIVISION of SWEET BROS.

72 ISLAND POND RD. SPRINGFIELD - MASS.

 **If you're fishing  
for higher filtering  
efficiency, AGITAIR  
FM AIR FILTERS are  
your best catch!**



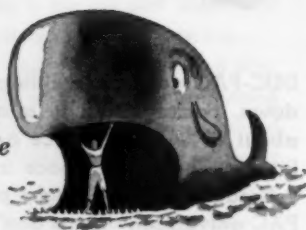
*High velocity  
...highest efficiency.*

*One-third less space required*

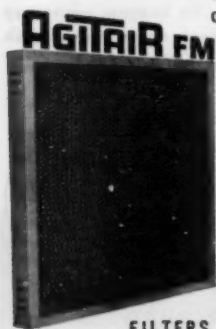


*Cuts installation and  
maintenance costs*

*Larger capacity  
...longer life*



Designed for an approach velocity of 530 fpm over the net media area, the high filtering efficiency of the AGITAIR FM increases as the dust load is applied. You save  $\frac{1}{3}$  in space required, in number of units to be installed and serviced. Very large dust-holding capacity of AGITAIR FM assures longer service periods, fewer cleanings per year, lower service charges. No exposed wire ends to cut or damage hands of service operators. Compare.



Send today for free  
Cost Comparison Chart.

**AIR DEVICES INC.**  
185 Madison Avenue, New York 16, N. Y.

FILTERS • AIR DIFFUSERS • EXHAUSTERS

## **new literature . . .**

### **Heating and Cooling Controls**

AUTOMATIC HEATING CONTROLS catalog describes 395 heating and cooling control devices — Minneapolis-Honeywell Regulator Co., 2726 4th Ave. S., Minneapolis 8. Chief addition to the line for 1954 is the Model T-86 "Round" thermostat for use in hand fired, stoker, oil, electric and both 24 volt and millivoltage (self-powered) gas heating systems. Other controls and systems described include the company's electronic "Moduflow" system which uses an outdoor thermostat to control indoor temperatures according to outside weather conditions. In addition to product descriptions, the booklet gives technical information on all heating and cooling control systems, valve capacities and thermostat heater setting data.

### **Warm Air Furnaces**

EIGHT PAGE BOOKLET designed for home owners provides information on winter operation of standard and "deluxe" warm air furnaces and on summer operation (air circulation) of "deluxe" models — Metromatic Mfg. Co., 21 Henderson St., Everett 49, Mass. Also described is the method by which hot water is kept in constant supply. Problems such as water at excessive temperatures, furnace blowing cold air for several minutes before delivering warm air, and failure of the oil burner to function properly are discussed. Possible causes of the trouble are listed and suggestions are made for its correction.

### **Metal and Insulation Fastening Equipment**

METAL STITCHING equipment for fastening copper, brass, aluminum, plastics, cold rolled steel or similar materials is explained in an eight page brochure which illustrates various models of stitchers suitable for different applications — Bostitch, 1007 Mechanic St., Westerly, R. I. Also available is a folder illustrating the company's special Model T-5 stapling tacker for use in stapling insulation around ducts and for other jobs where a blind clinch is required.

### **Gas Pressure Regulators**

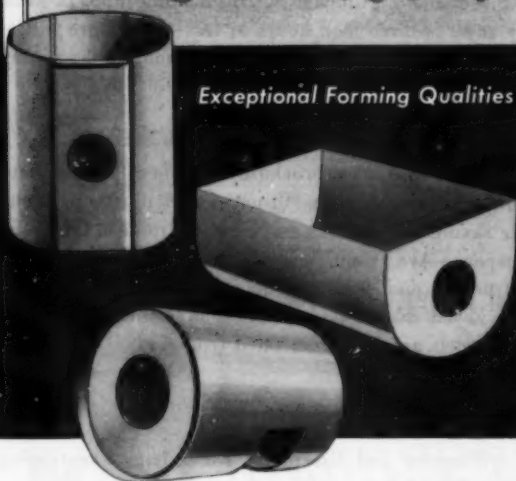
BULLETIN No. 2921-B (superseding Bulletin 2921-A) covers series 931 gas appliance pressure regulators — Penn Controls, Inc., Goshen, Ind. The regulators, designed for use on heating equipment, water heaters and in similar applications, are suitable for manufactured, natural, LP and mixed gases.

### **Packaged Air Conditioners**

TECHNICAL BULLETIN No. 77-5 (six pages) describes a line of packaged air conditioners designed for residential and small commercial uses — United States Air Conditioning Corp., 3300 Como Ave., S.E., Minneapolis 14. Units are available in 2, 3, 5 and 7½ hp sizes. Construction details, complete specifications and performance ratings are included.

HEAT-RESISTING STEELS  
**SHEARED**  
 TO SIZE FOR YOUR  
**Combustion Chambers**

Exceptional Forming Qualities



Ingersoll specializes in producing heat-resisting stainless steels—of exceptional forming qualities—specifically for oil burner combustion chambers.

Whether you use these steels in large or small quantities, Ingersoll facilities offer exceptional service by custom shearing to your own specified combustion chamber blanks, or multiples thereof.

**Advantages**

**OF HEAT-RESISTING STEEL CHAMBERS**

- No breakage in shipment or handling
- Lighter weight lowers freight costs
- Quicker heating—greater efficiency



Write, wire or phone for details

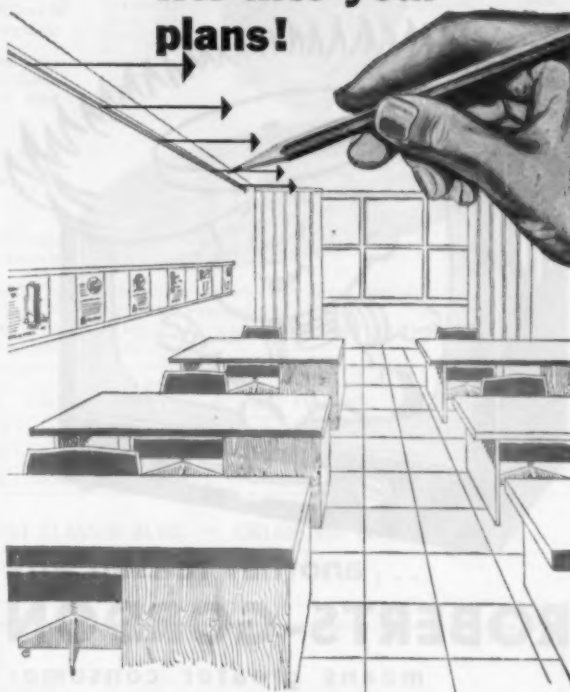
**Ingersoll** STEEL DIVISION

Borg-Warner Corporation  
 310 S. Michigan Ave., Chicago 4, Illinois  
 Plant: New Castle, Indiana

See how  
inconspicuously

**STRIPLINE**

fits into your  
 plans!



**Unlimited air distribution  
 provided by slender  
 continuous diffusers  
 ...another AGITAIR first!**

Stripline diffusers offer complete application versatility. They are ideal for installation in shallow lighting coves...window stools: for air curtaining of glass windows or exposed wall areas...side of furred beams... or as a decorative border blanketing the entire area with noiseless, draftless air distribution. Custom built with AGITAIR's patented diffusing vanes, Stripline diffusers create maximum mixing and aspiration... quick temperature equalization and correct air distribution over any desired length.

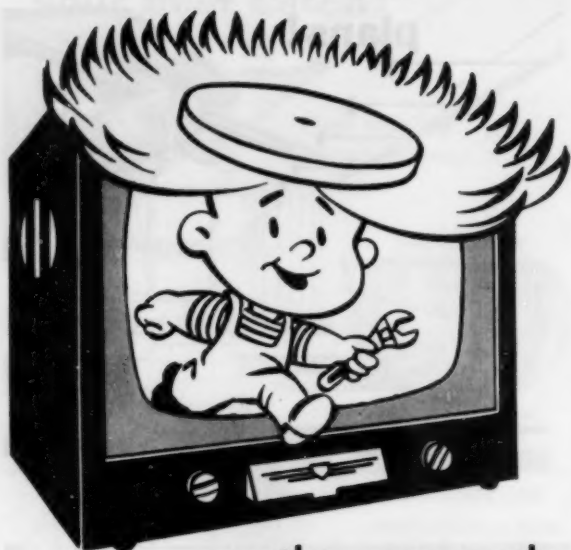
Write for your free copy of  
 Catalog S-100 today.

**AGITAIR** STRIPLINE

**AIR DEVICES INC.**  
 185 Madison Avenue, New York 16, N. Y.  
 AIR DIFFUSERS • FILTERS • EXHAUSTERS



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Roberts-Gordon, pioneer manufacturers of gas-heating equipment—including the exclusive patented Gordon Spreader-Flame burner and two thrifty, new firsts . . . a hot water heating boiler—the "GORDONEER", and the GORDON-AIRE Winter Air Conditioners . . . now gives you

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in your own city, on your local television stations,  
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ROBERTS-GORDON . . . Buffalo 6, N. Y.

What are ALL the reasons Roberts-Gordon means greater sales for me?

NAME.....

ADDRESS.....

CITY.....

DEPT. AA

Revive Your Sales With Roberts-Gordon!

### new literature . . .

(Continued)

#### Plastic Sheets

ILLUSTRATED BULLETIN on plastics includes data on laminated plastic sheets — Joseph T. Ryerson & Son, Inc., Ryertex Plastics Div., P. O. Box 8000-A, Chicago 80. Information is presented on the manufacture, grades, properties, fabrication and use of the sheets in homes and commercial establishments. Forty-four combinations of pattern and color are available in gloss or satin finish.

#### Packaged Chimney Housings

BRICK-PANEL packaged chimney housings are described in a four page illustrated brochure — Van-Packer Corp., 209 S. LaSalle St., Chicago 4. Installation time, the company says, is three man hours or less. Procedure for installation is shown in a series of nine photographs accompanied by brief explanatory text.

#### Horizontal Gas Furnace

FOUR PAGE consumer brochure describes "Southerner" horizontal forced air gas furnaces and illustrates many space saving applications — Norman Products Co., 1150 Chesapeake Ave., Columbus 12. For the dealer, technical, construction and performance information is provided and a keyed diagram identifies components of the unit. Four models are available, rated from 65,000 to 140,000 Btu input per hr.

#### Fans and Blowers

SPECIFICATIONS and list prices for exhaust, ventilating and window fans are given in a 12 page catalog — Frigid, Inc., 128-168 32nd St., Brooklyn 32. Also included is information on blowers and shutters. All models are illustrated.

#### Slitting Attachment

FOLDER DESCRIBES and illustrates a slitting attachment and the lock former machines on which it can be installed — The Lockformer Co., 4615 W. Roosevelt Rd., Chicago 50. According to the company, power shear operation can be obtained by installing the attachment on a lock former machine. The unit thus formed can handle all lengths of material and up to 20 gage without needing additional floor space. Units which can power this attachment are Models 20, 22, 24 and a special portable unit recently developed by the company.

#### Heating and Cooling Units

INFORMATION on "Winkler" air conditioners and gas and oil fired furnaces is presented in four circulars — South Wind Div., Stewart-Warner Corp., 1514 Drovers St., Indianapolis 7. Gas furnaces illustrated include horizontal, utility room and counterflow models. Oil fired equipment shown includes upflow, counterflow and utility room units. The air conditioner — of the air cooled type — can be used in conjunction with existing furnaces or as an



**EFFICIENT! ECONOMICAL!**

# LITTLE GIANT Recirculating PUMPS

... can be used in a variety of applications where a small, compact, low-pressure, high-volume pump is desired. Little Giant is a marvel of efficiency, built for years of trouble-free service.

**COMMON USES:** • Evaporative coolers • Circulating pumps for cold drink dispensers • Condensate removers for refrigerated cooling • Aeration of minnow tanks • Advertising displays • Milk Coolers • Yard Fountains • Oil Coolant pumps

Model # 2.....\$21 (Specify hooded inlet or threaded inlet. Same price)  
Model # 3.....\$33 (Specify 1/2" or 3/4" inlet) (All outlets 1/2" I.P.T.)  
Model # 4.....\$42 (Specify 3/4" or 1" inlet) (All outlets 1/2" I.P.T.)

**ALL PRICES F.O.B. OKLAHOMA CITY**

For complete Pump Kit including Little Giant Recirculating Pump, float valve and connector, 3' rubber tubing and electric switch ... add \$5.95 to price of model selected.

• All Models equipped with inlet screen.

• 110 volt 60 cycle current operation available on all sizes.

• 220 volt single phase current operation available on Model # 3 and Model # 4 with extra charge of \$2.

• All models equipped with 3' electric cord; longer cord at additional cost.

SPECIFICATIONS		Gallons Per Hour										Shutoff Head	Full Load		Meter h/p	Loaded RPM	Size		Ship. Wt.
Model No.	PSI	1 ft.	2 ft.	3 ft.	4 ft.	5 ft.	6 ft.	7 ft.	8 ft.	9 ft.	10 ft.		Amps	Watts			Ht.	Base	
#2	3 1/2 #	180	158	134	115	93	72	50	28			8 1/2 ft.	.75	40	1/150	2350	4 1/2"	4 3/4 x 3 1/2"	4 #
#3 1/2" Intake	7 1/2 #	350	329	308	286	275	240	220	200	180	157	17 1/2 ft.	2.1	160	1/40	2300	6-3/4"	6 x 4 3/8"	8 #
#4 3/4" Intake	7 1/2 #	475	446	417	388	358	320	301	272	243	215	17 1/2 ft.	2.2	165	1/30	1720	6-3/4"	6 1/4 x 3"	10 #

**Little Giant**

VAPORIZER CO., INC. • 5101 CLASSEN BLVD. • OKLAHOMA CITY, OKLAHOMA

NEW HEAVY DUTY MOTORS

HIGHEST GRADE DIE-CAST ALUMINUM CASE, WITH BAKED-ON PLASTIC COATING

STAINLESS STEEL SEAL HOUSING, ALL EXTERNAL SCREWS STAINLESS STEEL

UNDERWRITERS APPROVED GLASS INSULATED TERMINALS

EQUIPPED WITH LONG CORD FOR INSTALLATION

HERMETICALLY SEALED HOUSING FILLED WITH OIL. NO SERVICE NECESSARY.

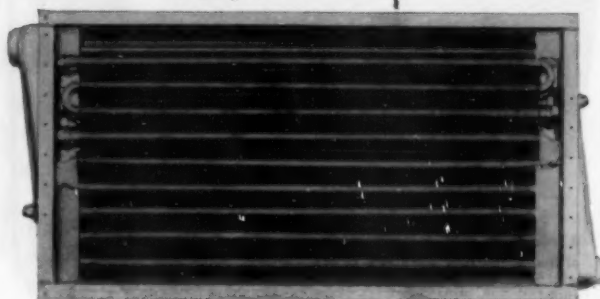
MOTOR OPERATES IN OIL—NEEDS NO LUBRICATION

VARIOUS TYPES OF OUTLETS AND INLETS TO SUIT THE APPLICATION

There is a Little Giant for every liquid handling problem where low pressure, high volume is required. Write for information on other Little Giant Recirculating Pumps.

**We Make**

## Extended-Surface



## HEAT EXCHANGERS Exclusively!

The pioneer in the field, AeroFin has concentrated on one thing, and one thing only—highly efficient, easily installed, easily maintained extended-surface heat exchangers. AeroFin's design, research, engineering and production experience and facilities are unequalled anywhere.

AeroFin is sold only by manufacturers of fan system apparatus. List on request.

**For High Efficiency, Easy Installation, Low Maintenance and Servicing Costs . . .**

**ASK THE AEROFIN MAN**

# AEROFIN CORPORATION

410 South Geddes St.  
Syracuse 1, N. Y.

## new literature . . .

(Continued)

individual unit. It is suitable for installation in basements, utility rooms, or attics.

### Metal Fabricating Service

CIRCULAR illustrates equipment such as louvers, control boxes, mounting brackets, etc., which the company will fabricate from blueprints or will design — Fabrication Div., The Industrial Equipment Co., Minster, Ohio. Other products the company offers to fabricate include shears, brakes, nibblers, rolls, spot welders, etc.

### Solenoid Valves

MODEL 73 SOLENOID VALVES are described in form RS111 (6 pages) — A-P Controls Corp., 2450 N. 32nd St., Milwaukee. Various applications are described and are illustrated with schematic sketches. Also included are dimensional details, capacity tables and a selection chart.

### Warm Air Heating Units

SUGGESTIONS for heating economies and for making homes more comfortable the year 'round are contained in a 16 page consumer booklet, *Home Owner's Guide to Better Living* — Century Engineering Corp., 401 3rd St., S.E., Cedar Rapids, Ia. The booklet describes several methods of heating a home and explains which type is best suited for specific kinds of buildings. Furnaces cov-

ered include highboy, lowboy and horizontal models. Also illustrated and described are a cooling unit and a humidifier.

### Gas Burners

DATA SHEETS cover gas conversion burners designed for various types of residential and small commercial buildings — Scott-Newcomb, Inc., 3704 Superior Ave., Cleveland 14. Models SNG-1, SNG-2 and SNG-3, of the inshot type, are made to be interchangeable with oil burners. They are available in capacities ranging from 65,000 to 350,000 Btu. The "Barber Junior" model, for use in any type of furnace or winter air conditioning unit, has a capacity range of 70,000 to 400,000 Btu input.

### Perimeter Diffusers

PERIMETER DIFFUSERS are described in a 12 page catalog which illustrates various applications and diagrams a four step installation procedure — Titus, Inc., 1304 Broadway, Waterloo, Ia. Engineering data includes specifications, smoke and air flow patterns and pressure requirement charts. Also illustrated are return air grilles for residential or industrial application.

### Combustion Chambers

CATALOG INSERT covers square, round and adjustable combustion chambers — The American Clay Forming Co., Tiffin, Ohio. Combustion chambers described include the round, lightweight type in four standard sizes, with

# COOLS! HEATS!

It's Dramatically New!

Capri

WINDOW TYPE ROOM  
AIR CONDITIONERS

1/2, 3/4 and 1 Ton Units

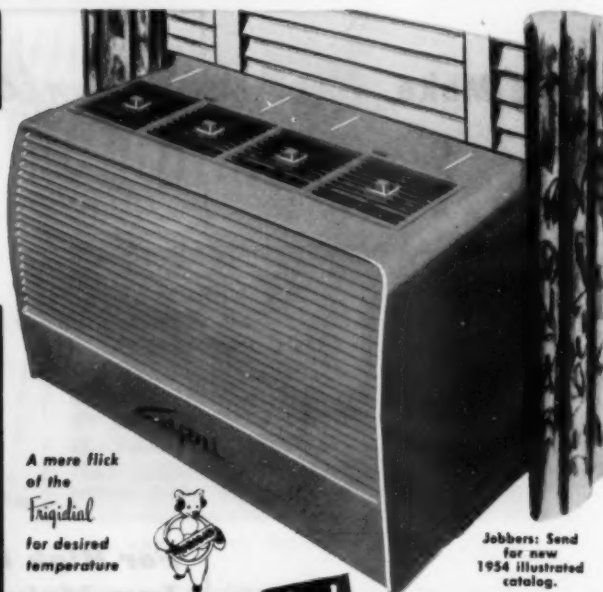
With the Capri Air Conditioner, you have the answer to any customer's need. Popularly Priced; Modern Styling; Dehumidifier; 2 Speed Da-Nite Cooling; Exhausts Stale Air... Intake fresh, cool outside air. Double Size Filter for greater health protection; U. L. and C. S. A. Approved; 5 Year Warranty.

Also a complete line of FANS. In FRIGID you have a proved answer to any question of quality, styling and guaranteed performance in air movement.

It's FRIGID for Home and Industry... Electrically Reversible Window Fans; Hassock Fans; Attic Fans; Blowers; Shutters; Exhausts... all priced right to give you more profits in '54.

**FRIGID** INCORPORATED

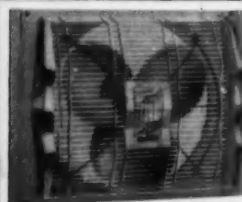
126-168 THIRTY-SECOND STREET BROOKLYN 32, N. Y.



A mere flick  
of the  
Frigidial  
for desired  
temperature



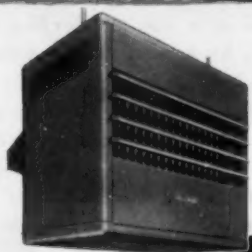
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**New! FRIGID**  
**Electro-Control**  
**PUSH BUTTON**  
ELECTRICALLY REVERSIBLE  
**WINDOW FANS**

6 Quiet Speeds... 3 Speeds Exhaust, 3 Speeds Intake

**New 250,000 BTU Model**



**gives Reznor dealers the most complete gas unit heater line**

Now, more than ever before, you need to sell Reznor to get your full share of the gas unit heater business. Reznor is already the world's largest-selling gas unit heater. The addition to the line of the new 250,000 BTU model will increase the lead.

Model US250-F is more than just another unit heater. It's the first unit of its size offered by any nationally recognized unit heater manufacturer. And it's the first of any size with the twin-fan design.

Why two small fans (operating from one motor) instead of one large fan? More effective air distribution at a much lower noise level is the answer. The new unit moves 3,200 CFM with an effective air throw of 83 feet.

All that heating capacity and all that power—in a cabinet just 33½" x 36" x 24½". It's the ideal answer to a lot of tough commercial and industrial heating problems. You can't afford to be without it.

See your Reznor distributor today for details, or write for your copies of specification sheet NPS-5401 on the new model and catalog GN-52 on the complete line.

**The Reznor Manufacturing Company**  
53 Union Street, Mercer, Pa.



## How to Find and Keep New Business During Your "Slack Period"



There's no "slack period" in the furnace and boiler cleaning business. The cleaning business keeps your service crews busy all year, contacts and KEEPS new customers by firmly establishing you as an authority — the man to call for all other heating needs.

Join the many others who are building cleaning businesses this year with high quality Premier Furnace and Boiler Cleaners. Premier machines are the world's most widely used furnace cleaners!

- Separately ventilated motor — prevents burnouts on hot jobs.
- Extra large filter area — for continuous, on-the-job operation.
- Dual purpose — powerful vacuum unit PLUS portable hand blower.

Premier Furnace Cleaners, the oldest name in the furnace cleaning business, make cleaning jobs easy, keep the jobs profitable. Compact, easy to handle, a low cost Premier Cleaner allows one man to average four profitable jobs a day. And customers like the way Premier units handle messy work so thoroughly and quickly.



755 Woodlawn Avenue, St. Paul 1, Minnesota

**TAKE THE FIRST EASY STEP TO A NEW, MONEY-MAKING BUSINESS — WITH THIS COUPON.** Be ready for the warm-weather slack period. Act now!

PREMIER COMPANY, Dept. 406  
755 Woodlawn Ave., St. Paul 1, Minnesota

Without obligation, please send complete details on the Premier Furnace Cleaner.

NAME .....

FIRM .....

ADDRESS .....

CITY ..... ZONE ..... STATE .....

## new literature . . .

(Continued)

or without adjustable baffles; square and rectangular thin wall types with built in corbel; and round thin wall and adjustable lightweight types.

### Heating and Cooling Equipment

"BLEND-AIR" heating and cooling equipment is described in a 32 page catalog — The Coleman Co., Inc., Wichita, Kans. Equipment listed and illustrated includes gas and oil furnaces, air conditioners, gas wall heaters, and gas and oil water heaters. Also listed are accessories including return air grilles, chimney crowns, draft ejectors and oil lifters.

### Baseboard Heating System

ILLUSTRATED FOLDER describes warm air baseboard heating — Patco Mfg. Co., 231 N. Broad St., Philadelphia 6. Advantages claimed for the system are draft-free warmth, economy, cleanliness and silent operation. Descriptions cover applications of the baseboard in various types of old and new houses. Photos show installations in the living room, dining room and bedroom.

### Deep Throat Nibbling Machines

SPECIFICATION SHEET presents data on three models of universal deep throat nibbling machines — S & S Ma-

chinery Co., 140 53rd St., Brooklyn 32. Also being offered is a circular listing various other machine tools available, including punches, shears, presses, welders, etc.

### New York State Building Requirements

SPACE, STRUCTURAL, fire-safety and equipment requirements (including requirements for heating, ventilating and air conditioning systems) for multiple dwellings in the state of New York are presented in State Building Construction Code Applicable to Multiple Dwellings — State Building Code Commission, 1740 Broadway, New York 19. This is the second portion of the State Building Code, the first part, applicable to one- and two-family dwellings, having been issued in 1951. A third portion — now in process — will cover all other types of building.

The multiple dwelling code applies to new buildings and to certain existing buildings: a) one which became occupied as a multiple dwelling after the code became effective; b) a building moved into or moved within the municipal limits subject to the code which is to be occupied as a multiple building; and c) a building occupied as a multiple dwelling which is altered or repaired when the cost of such alterations or repairs within any 12 month period exceeds 50 per cent of the cost of replacement of the building at the beginning of that 12 month period.

## Actual tests

## prove Cincinnati Elbows last longer!



All Cincinnati Elbows are covered with protective zinc because the elbow is hot-dipped *after* formation. Complete galvanizing insures a rust-proof longer life elbow with no trouble-causing leakage.

Cincinnati Elbows, precision made of uniform quality, are guaranteed to fit any size standard pipe. Available in any size, angle and metal, including galvanized steel, stainless steel, copper and aluminum.

Give your customers the best elbow available.

ASK YOUR JOBBER.

*Cincinnati Elbows fit better  
because they're made better!*

**CINCINNATI ELBOW CO.**  
2021 EASTERN AVE., CINCINNATI 2, OHIO





You don't have to allow for expansion or cross joints with **Follansbee Seamless Terne Metal Roofing**...

Low-pitch roofing doesn't have to present any special problems in expansion-contraction allowances... not when you specify Follansbee Seamless Terne Metal. Expansion joints are unnecessary, for Terne has such a negligible coefficient of expansion.

Follansbee Seamless Terne can be cut to any length up to fifty feet, and installed without cross seams. The elimination of these unnecessary cross seams not only insures a more serviceable weatherproof roof, it cuts down on labor and installation costs as well, and there's a considerable saving of solder, too.

This durable metal roofing material offers many other advantages, as well. It provides strength without the comparable weight of other quality roofing. The coating won't flake off or peel. Terne has been service-proved over long periods on residential, industrial, and institutional installations. Roofing specifications and installation details are available for the asking. Write today for the complete brochure on Follansbee Terne Metal applications.

## FOLLANSBEE STEEL CORPORATION

GENERAL OFFICES, PITTSBURGH 30, PA.

Polished Blue Sheets and Coils      Seamless Terne Roll Roofing  
Cold Rolled Strip



Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee, Sales Agents—Chicago, Indianapolis, Kansas City, Nashville, Los Angeles, San Francisco, Seattle, Toronto and Montreal, Canada. Plants—Follansbee, West Virginia

FOLLANSBEE METAL WAREHOUSES  
Pittsburgh, Pa.      Rochester, N.Y.      Fairfield, Conn.

LOW COST



HIGH ADAPTABILITY

## MOR-SUN AUTOMATIC WALL FURNACES

The new Mor-Sun Model C-75 is a low-cost, automatic warm air furnace designed to provide an economical, low budget source of dependable, automatic warm air heat for small homes, apartment units and as a space heater for home additions, hard-to-heat sections of older homes, garages, etc.



### HERE ARE SOME OF THE C-75's OUTSTANDING FEATURES:

- Compact—25" square x 52 1/4" high
- Saves Space—fits completely into the wall
- Adaptable — grilles available for side-wall or corner installations
- Gas or Oil—economical with either
- 10" Circulating Fan
- Fully Automatic — thermostat is standard equipment
- Capacities — Gas—input 75,000 BTU/hr. Oil—output 57,000 BTU/hr.
- Approved by AGA and listed by UL

### FOR COMPLETE DETAILS — FILL IN COUPON — MAIL TODAY!



• Get all the facts about this new Mor-Sun sales-builder. Its attractive low price and easy installation—no ducts, all parts easily accessible through front grille—make it an ideal "extra-profit" item for you. Write today!

Mor-Sun Furnace Division, MORRISON STEEL PRODUCTS, INC.  
609 Amherst Street, Buffalo 7, N.Y.

Send me all the facts about the Model C-75 and the complete Mor-Sun line.

Name..... Title.....  
Firm.....  
Street.....  
City..... Zone..... State.....

Also manufacturers of ROLY-DOOR Steel Garage Doors and CARRY-ALL Truck Bodies

*we hear that . . .*



SHOWN AT THE Waterman-Waterbury Co.'s merchandising and service clinic are dealers of the Niles Sheet Metal Supply Co., Niles, Ohio

THE WATERMAN-WATERBURY Co. recently sponsored a series of nine three-day dealer clinics for midwestern dealers at its factory in Minneapolis. The emphasis of the clinics was on sales, but the course also covered all aspects of engineering. Detailed information on the operation and installation of the "Comfortrol" face and bypass unit was given — in the form of a working model of the unit, set up for the dealers' inspection, and a film presentation. Diplomas were awarded to the dealers at the close of the sessions.

THE DATES OF THE ANNUAL dealer school and sales meeting originally scheduled by Majestic Co., Inc., to be held

on April 23 and 24, have been changed to April 29 and 30.

ARMCO STEEL CORP. recently moved its Indianapolis sales activities to new quarters at 1839 N. Meridian St. The Indianapolis office covers central and southern Indiana.

THE MERCHANDISING program of the U. S. Machine Div., Stewart-Warner Corp., was presented to dealers in Chicago, Boston and Philadelphia in the form of a play given by the "Winkler Hamateurs." Cast of characters included Claude A. Potts, general sales manager; Robert C. Hulse, sales promotion manager; Philip C. Kosch, manager of the training institute; Walter E. Blake, district sales manager; Norman J. Gill, advertising manager; Al Wynkoop, Gerald F. Deer and Walter R. Leander. The play tells the story of a newly enfranchised dealer who learns how to take full advantage of the company's dealer program.

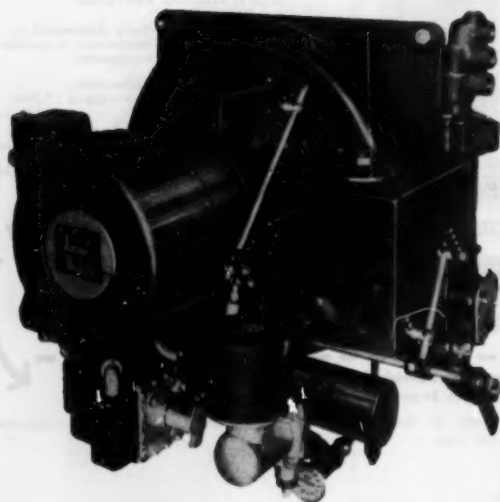
THE TORRINGTON MFG. CO. has completed a new Oakville, Ont., plant for its subsidiary, the Torrington Mfg. Co. of Canada, Ltd. The new plant will help make the company's line of fan blades and blower wheels available to Canadian customers.

OFFICES AND PRODUCTION facilities of the Loyd Scruggs Co. have been moved to a new plant in Festus, Mo. The

## "Cold Starts" with Heavy Oils are Faster, Smoother, Surer

with the new **JOHNSON "Fifty-three"**

### Metering Pump Burner



Built with a positive-displacement Metering Pump . . . a hydraulically balanced 3-Way Magnetic Oil Valve . . . and a high-efficiency Suction Pump, this new Johnson Burner will start up and operate automatically on colder oils than any other burner on the market today.

Never before has any heavy-duty burner so completely overcome the problem of Variable Temperatures and Viscosities. The Johnson "Fifty Three" makes it possible for the first time, to maintain a fixed Air-Fuel-Ratio regardless of temperature and viscosity changes.

The "Fifty Three" is built in 7 sizes, from 25HP to 400HP capacities . . . and all characterized by the high efficiency and fuel economy for which Johnson Burners have long been famous. All working parts are easily accessible for inspection, servicing or regulation. If you have a heavy-duty heating problem, make it a point to investigate the performance of this great new burner. We will gladly send you detailed information.

*Johnson Oil Burners.....*  
**S. T. JOHNSON CO.**  
 940 Arlington Ave., Oakland 8, Calif.  
 Church Road, Bridgeport, Pennsylvania

Builders of fine Oil Burner Equipment since 1903



Standard in the field for nearly 40 years. THARCO stays put! — No shrinking, cracking or checking. Now available in either black or light gray in 1-pound cans to 350-pound drums. Order from your jobber.

## The ARMSTRONG COMPANY

241 S. Post Street

Detroit 17, Michigan

## THE RIGHT SHEARS FOR ANY CUTTING JOB

### MARSHALLTOWN



ROTARY  
THROATLESS  
SHEARS

CUTS ALL SHAPES—SIZES

- QUICKER
- EASIER
- FASTER

Here's a shears that's right for every job. Speedy — efficient. Cuts up to 1/4 inch stock — speed to 6 ft. per minute. Excellent for irregular cutting or straight splitting. Available in hand operated or motorized models. Prompt shipment. Send today for special illustrated bulletin.

**MARSHALLTOWN MFG. CO.**  
Marshalltown, Iowa



**"TI-CO"<sup>®</sup>**  
**GALVANIZED SHEETS**  
*cut my fabrication*  
**costs 20 to 25%!"**

"Before I started using new Inland Ti-Co galvanized sheets, the biggest profit leak in my shop was wasted fabrication time," says Maurice L. De Wulf, heating contractor of Roselle, Illinois

"Figure for yourself what it costs to form a 10-foot heating duct with a Pittsburgh lock seam. Then if the zinc coating flakes or peels along the seam—*just double the cost!* The job has to be done over, and though you may be able to salvage some of the material, you can't salvage those wasted man-hours."

Mr. DeWulf is just one of many sheet metal men who has found that lost time due to faulty galvanized sheet coatings can be prevented by using Inland Ti-Co . . . developed especially to meet the need for a galvanized sheet that can take the toughest forming without cracking, flaking or peeling of the zinc coat.

**NEW INLAND TI-CO GALVANIZED SHEETS . . .** galvanized by a patented, continuous process that eliminates the brittle iron-zinc layer which causes ordinary galvanized to crack and peel. Yet **TI-CO costs no more!** Ask your dealer for Inland Ti-Co. Look for this stencil on all your galvanized sheets.

Write Dept. A2  
for free descriptive  
booklet about Ti-Co.



## INLAND STEEL COMPANY

38 South Dearborn Street • Chicago 3, Illinois

Sales Offices: Chicago • Milwaukee • St. Paul • Davenport  
St. Louis • Kansas City • Indianapolis • Detroit • New York



# 3 ways to MODERNIZE oil burner installations

## install VENTALARM® Whistling Tank Fill Signal

Here's the way to provide for modern, automatic oil delivery. Guarantees accurate, no-spill fills day or night, whether customer is at home or away.

"Just Fill While the Whistle Blows"

A variety of models for new and old tanks.



## install SCULLY® GAUGE

Underwriters' Approved

A modern convenience in every way. Big figures readable at first glance. Face adjustable to any angle. Built for accurate, service-free operation. Specify tank depth when ordering.



### "BUTTON-LIFT" INSTALLATION

Lifting the button indicator draws cork arm up close to main shaft for easy installation even in partly filled tanks.



## or install this combination... VENTALARM® GAUGE

Underwriters' Approved

The famous whistling fill signal and easy reading gauge in one modern unit. Goes on tank as integral part of vent pipe.

Specify tank depth and opening when ordering.

One item to install instead of three... with button-lift convenience described above.



Scully Products are manufactured under U.S. and foreign patents or patents pending.

See your regular Supply House.

**SCULLY SIGNAL COMPANY**

174 Green St., Melrose 76, Mass.

Canadian Licensees: EMPIRE BRASS MFG. CO., LTD., London, Ontario  
©1953 Scully Signal Co.



## we hear that . . .

(Continued)

new plant will provide manufacturing space of approximately 43,000 sq ft. About 150 people will be employed.



CHESTER S. STACKPOLE, new general sales manager of the Heating and Cooling Div., Union Asbestos and Rubber Co., addresses the company's sales representatives at the first annual sales meeting in Chicago. Others at the table include E. E. Hokin, vice president in charge of the division, and three other vice presidents: J. F. Corcoran, W. H. Fehrs and C. L. Moorman.

THE COMPLETE PRODUCT LINE of the Union Asbestos and Rubber Co.'s new heating and cooling division was introduced to approximately 100 sales representatives from all over the United States and Canada at the company's first annual sales meeting held recently in Chicago. Prior to the formal sales meeting, the group was taken on a tour of the company's Blue Island and Firecraft plants.

PRINCIPAL SPEAKERS at the 1954 dealers' convention of the Hall-Neal Furnace Co. were Fred S. Boone, president of the company, and Professor S. Konzo of the University of Illinois. Over 200 dealers from all parts of the country attended the two day sessions. Two new furnaces were introduced — one, the "WO Victor" oil burning furnace and the other, the "Halco" lowboy. During the convention, one of the new models was set up to demonstrate ease and speed of assembly.

THE HEIL Co. has revised and enlarged its dealers' marketing kit which is available to authorized dealers through their local heating wholesalers. Among the sales aids provided are reference bulletins on such subjects as how to use the company's cooperative advertising program, how to install effective heating exhibits, and other phases of retail merchandising.

PLANS FOR THE 1954 sales program of the Sunbeam Air Conditioner Div., American Radiator and Standard Sanitary Corp., were discussed by division officials at the five day sales meeting held recently in Elyria, Ohio. Attending the meeting were district representatives from 21 sales offices who were given a preview showing of the division's new air conditioning and gas fired heating units.



Rock Island Air Conditioning Registers and Grilles  
have Practical Beauty, Quality, and Efficiency

**YET**

the ability to purchase at the right price and terms  
with prompt delivery . . . . . and a cordial relationship  
with a manufacturer of 43 years' standing

**ARE ESSENTIAL TOO.**

Write us for catalog and prices and look for our  
New Perimeter Base Diffuser.

**ROCK ISLAND REGISTER COMPANY**  
2435 Fifth Avenue Rock Island, Ill.



*Superior*  
**Air Conditioners and Warm Air Furnaces**  
for  
**Summer and Winter**  
**AIR CONDITIONING**

Completely New For  
RESIDENTIAL AND COMMERCIAL INSTALLATIONS  
COMPACT — COMPLETELY AUTOMATIC  
DESIGNED FOR MINIMUM SPACE

COMPLETE LINE of  
**2-3-5 Ton Air Conditioners**  
Gas and Oil

HI-BOY — LOW-BOY — COUNTERFLO — GRAVITY — SUSPENDED UNITS  
FROM 60,000 BTU to 400,000 BTU

*Superior* **FURNACE & MANUFACTURING CO.**  
322 HAMILTON AVENUE PLYMOUTH, MICHIGAN

**we hear that . . .**

(Continued)



FURNACE and air conditioning filters are now being manufactured by the Amer-glas Div., American Air Filter Co., Inc., in its new plant at Louisville

A NEW \$1 MILLION manufacturing building in Louisville now houses the production facilities for furnace and air conditioning filters manufactured by the Amer-glas Div., American Air Filter Co., Inc. According to F. Robert Walker, sales manager, the plant will enable the division to double former production. The new plant's location on a 32 acre tract allows for further expansion as future requirements demand.

GROUND HAS BEEN BROKEN for a new 237,000 sq ft plant in Long Beach, Calif., to house the Grayson Controls Div., Robertshaw-Fulton Controls Co. The new plant, which will greatly increase the manufacturing capacity of

the division, will employ about 2400 people.

C. B. PHILLIPS, president, National Warm Air Heating and Air Conditioning Association, has appointed W. C. Walter to the association's publicity and merchandising committee. Mr. Walter is general sales manager, Norge Heat Div., Borg-Warner Corp.

THE HERBSTER PRODUCTS CO., manufacturers of a combination heating system and clothes dryer and the "Torcon" heat exchanger, has recently become an affiliate of the Bettcher Mfg. Corp.

J. B. O'CONNOR, formerly of the Eckstein Co., has entered into partnership with William I. Negle, manufacturers' representative. The new firm, which will operate as Negle & O'Connor, will handle warm air heating and sheet metal lines. Offices are at 248 4th Ave., Pittsburgh.

THE INTERNATIONAL HEATER CO. has been holding a series of distributor-dealer conferences at its Utica plant. The meetings began on March 15 and are scheduled to run until April 21. The purpose of the conferences is to acquaint distributors and dealers with the engineering features of the company's line of heating equipment. Covered in the discussions are various sales and service problems encountered with oil, gas and coal fired winter air conditioners and summer air conditioning units.



## Oil Burner NOZZLES

**for Quiet - Uniform -  
Efficient Combustion**

- Mirror Finish Tip causes heat deflection and minimizes gumming and coking.
- All nozzles individually flow-tested.
- Steinen Nozzles assure better all around burner performance.
- Sizes from .50 GPH to 35 GPH—both hollow cone and solid cone spray patterns.

*Contact your jobber or write us for additional information*

**W. M. STEINEN MFG. CO., 438 Essex St., Newark 5, N. J.**

ESTABLISHED 1922    TRADE MARK    MANUFACTURERS OF ACCESSORIES FOR OIL HEATING AND AIR CONDITIONING

**BE HONEST . . . "DO WE NEED  
A QUALITY LINE OF LOW COST UNITS  
TO COMPETE FOR VOLUME SALES?"**

**BE PRACTICAL . . . "IS SUCH A LINE  
OF AUTOMATIC FURNACES AVAILABLE?"**

**BE WISE . . . ACT NOW . . . INVESTIGATE**



**OIL FIRED — GAS FIRED**

- Basement Units — Gravity or Forced Air • Suspended Units
- Up Flow & Down Flow Hi Boys Built to Serve
- 20 Year Guaranty
- Priced to Sell • Lowest Prices ever.

**J. V. PATTEN COMPANY**

**SYCAMORE, ILLINOIS**

Established 1900

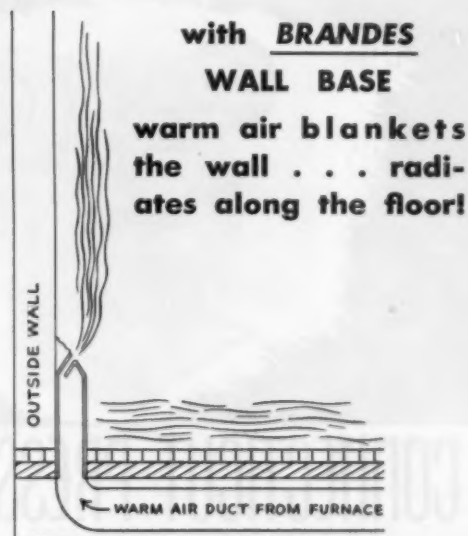
Incorporated 1928

**THE FIRST,  
FINEST,  
PROVED,  
AIR BASE HEATING!**

Brandes Wall Base, for forced warm air heating systems is the first, and the finest! Experiments are over . . . it's proved performance at low cost! Write The Brandes Company, 2046 Winnebago Street, Madison 4, Wisconsin.

**\*PATENTED WALL BASE HEATING**

**It's BRANDES\***



**\*PATENTED WALL BASE HEATING!**

**we hear that . . .**

(Continued)



**PRESIDENT JULIAN A. McPHEE** (left), of California State Polytechnic College, receives scholarship check from **Albert Hanson**, vice president, Drayer-Hanson, Inc., while four alumni, now Drayer-Hanson employees, look on

DRAYER-HANSON, INC., has established a four year scholarship in air conditioning and refrigeration at the California State Polytechnic College, San Luis Obispo. Program for the first year is designed to prepare the student to work for a heating and ventilating contractor; for the second year, to work for a manufacturer's agent, a contractor or a consulting engineer; for the third year, for a refrigeration engineer. The fourth year furthers his

studies as an air conditioning engineer preparatory to working with factories, office buildings, theaters, etc.

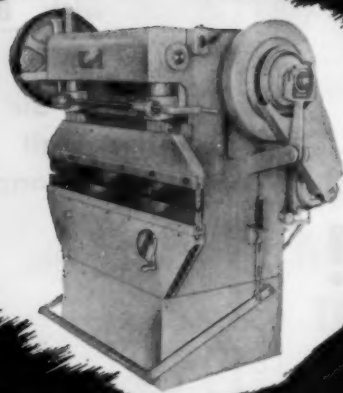
Air conditioning and refrigeration products were demonstrated at the company's recent three day sales meeting held in Los Angeles. One of the features of the meeting was a talk by C. W. Nessell, field research director, National Warm Air Heating and Air Conditioning Association, who reported on the findings from his mobile testing unit.

HERBSTER PRODUCTS CO., Cleveland, is setting up a national dealer organization, extending dealer operations to all areas of the country. The company manufactures a line of gas fired forced air furnaces with cast iron concentric venturi heat exchangers.

AT THE ANNUAL MEETING of the Heating and Cooling Coil Manufacturers' Association held in Chicago recently, the following officers were elected for the ensuing year: P. G. Kayser, president; W. C. Jones, vice president; and G. W. McCormick, Jr., secretary-treasurer. Mr. Kayser is head of the heat transfer section, McQuay, Inc. Mr. Jones is section engineer of the extended surface section, Westinghouse Electric Corp.

THE AIR CONDITIONING DIV., General Electric Co., has established two new sales regions — the southeastern, which will include states from Maryland through Florida, and the east central, which runs from western Pennsyl-

Announcing **THE NEW...**



WRITE FOR  
CATALOGUE

**CONNECTICUT PRESS BRAKE**

4 FOOT MODEL AVAILABLE NOW  
THOROUGHLY ENGINEERED AND TESTED

**W. WHITNEY STUECK INC.**

OLD SAYBROOK, CONN., U. S. A.

## NEW HOPE in the battle against **CANCER**

THE FIGHT against man's cruellest enemy is far from won. If present rates continue, 23 million living Americans will die of cancer—230,000 *this year*. And thousands of these will die needlessly—through cancer that could have been cured if treated in time.

ALL THE SAME, there have been victories. Thousands who once would have died are being saved—thanks, in part, to your donations to the American Cancer Society.

AND, LAST YEAR, the Society was able to allocate \$5,000,000 of your donations to research aimed at finding the ultimate cure for *all* cancer. That's more money than ever before.

MUCH MORE, of course, remains to be done. So please make *this year's* gift a really generous one!

**Cancer**

MAN'S CRUELEST ENEMY

Strike back—Give

AMERICAN CANCER SOCIETY



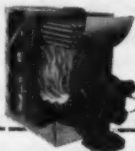


sell more--faster--with

**Radiant**

**Radiant OIL BURNER FOR RESIDENTIAL, COMMERCIAL, INDUSTRIAL USE**

A Complete Line . . . 34-30 gals. Shell Head Models 1/2-10 gals. Unsurpassed burner performance . . . competitively priced . . . factory guarantee . . . nationally distributed . . . protected territories.



**Radiant OIL FIRED WINTER AIR CONDITIONER**

Available in four models: Low Boy, Suspended Unit, Hi Boy, Counter-flow. Factory assembled and shipped complete.



**Radiant AUTOMATIC ELECTRIC SUMP PUMP**

For all Drainage problems — boiler, elevator and grease pits, cellar and basement sumps, water transfer for irrigation. Permanent, silent, trouble free operation. All bronze construction . . . dynamically balanced impeller . . . perfect alignment.

**Radiant UTILITY PUMP**



Discharges waste water from laundry tubs, washing machines and other fixtures or appliances located below sewer outlets. For draining water tanks and swimming pools, circulating water in cooling systems. All bronze construction, dynamically balanced impeller, rotary type seal.

**RADIANT UTILITIES CORP.**  
8817 18th Avenue, Brooklyn 14, N.Y.



Write for complete literature on all Radiant Products.

*The next BIG Appliance...*  
**ROOM AIR CONDITIONERS**



*and Lombard has the unit*

**Priced Right!** Priced to become your air conditioning "leader."

**All Steel!** This is not a "cheapened" unit, but a real buy!

**High Capacity!** Highest BTU output per hour in standard units.

**Attractive!** Neat and trim . . . a modern beauty in good taste.

**Quality Plus!** From its GE fan unit to its complete thermostatic operation.

**Easy to Install!** Complete kit for easy installation in any window.

**DISTRIBUTORS-DEALERS**

*Get the facts NOW-write*  
**LOMBARD MFG. CO., Youngstown, O.**

*This Can't Happen with "National Metal" "ANGLE RINGS!"*



*Insist on*

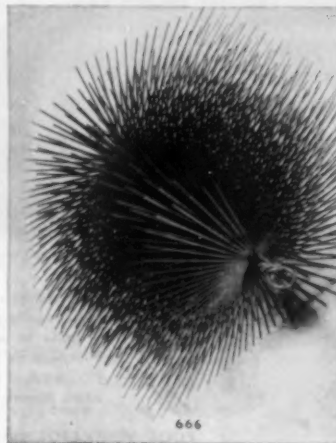
Angle Rings that are rolled correctly to your specification and avoid trouble and delays. All Rings correctly made to size — with a true circle and 90 angle. Furnished with or without holes. Write for list of stock sizes and discounts.

**NATIONAL METAL FABRICATORS**

2140 S. Sawyer Avenue

Chicago 23, Ill.

**SCHAEFER**



*chimney  
cleaning  
brushes*

**AVAILABLE IN  
ROUND OR  
SQUARE  
DESIGNS**

You'll do a better, faster cleaning job with the SCHAEFER Chimney Cleaning Brushes. Precision built, in all sizes for round or square chimneys. Choice of flat tempered steel wire, round black tempered wire, or selected Bassine Fibre, with threaded nipples or loops. Write for catalog and prices.

**LOOK for the trademark** **SCHAEFER BRUSHES**  
**SCHAEFER BRUSH MFG. CO.** **MILWAUKEE**  
117 W. WALKER STREET • MILWAUKEE 4, WIS.  
**BUY SCHAEFER**  
**... IT'S SAFER**

In to stay when you use



## Hardened Screwnails

for fastening  
SHEET METAL to WOOD  
WOOD to WOOD  
or other fastenings  
where you need  
NAIL DRIVING SPEED with  
SCREW HOLDING POWER

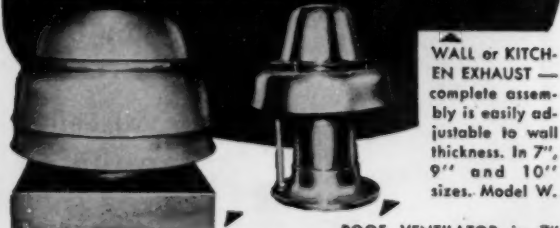
Ask your P-K Distributor for samples and the SCREWNAIL folder, or write:  
Parker-Kalon Division, General  
American Transportation Corporation,  
200 Varick St., New York 14.

**PARKER-KALON®**  
FASTENERS

## New COOK Blower Ventilators

Backwardly-inclined impeller, non-overloading

- ★ All-aluminum
- ★ Easy installation
- ★ Quiet impeller
- ★ Motor sealed from air stream
- ★ Automatic back-draft damper



ROOF VENTILATOR, Model BV, direct drive, 9" to 21", 400 to 5000 cfm.

ROOF VENTILATOR in 7", 9" and 10" sizes. Base fits 6" and 8" pipe. Handsome interior grille with this and above model. Model R.

WALL or KITCHEN EXHAUST — complete assembly is easily adjustable to wall thickness. In 7", 9" and 10" sizes. Model W.

**COOK**



Duct Fan



Exhaust Fan



Man Cooler Ventilator



Roof Ventilator

Write for Catalog BV, Dept. AA, Loren Cook Co., Berea, Ohio.

we hear that . . .

(Continued)

vania through Indiana and Michigan. Headquarters of the southeastern region will be in Atlanta, of the east central region, in Cleveland. Jack S. Beldon, manager of marketing for the division, said that this expansion was caused by the tremendous demand for air conditioning. "Forecasts indicating that this heavy demand will continue," he said, "have caused us to sharply raise our sales objectives in home heating and cooling equipment, heat pumps and packaged air conditioners."

A PROGRAM of two scholarships annually, aimed at helping fill industry's need for more engineering talent by encouraging promising engineering students to complete their education, has been inaugurated by the Coleman Co. The awards are \$300 each, one each year for an outstanding senior engineering student at Kansas University and the other at Kansas State College. Winners are selected by a faculty scholarship committee at each institution in cooperation with Coleman personnel officials.

THE SAFETY PROGRAM at John J. Nesbitt, Inc., includes the furnishing of gloves to all workmen handling sheet steel in fabricating and assembly operations. This includes sheet handlers; shear, punch press and brake operators; spot welders; grinder operators; and parts assemblers. Plant officials estimate that this practice re-

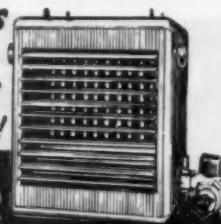
## 3 SPECIFIC SOLUTIONS TO 3 SPECIFIC HEATING PROBLEMS

Only DELTA Makes All 3!



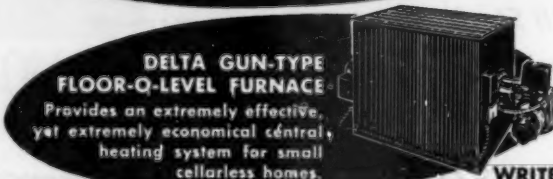
### DELTA DIRECT-FIRED OIL UNIT HEATER

For lowest cost industrial heating. Ideal for factories, warehouses, commercial buildings, and locations requiring high velocity air delivery.



### DELTA SUSPENDED-HORIZONTAL FURNACE

Especially shallow for narrow crawl spaces and attics. Larger models for offices, partitioned spaces, stores, gas stations.



### DELTA GUN-TYPE FLOOR-O-LEVEL FURNACE

Provides an extremely effective, yet extremely economical central heating system for small cellarless homes.

WRITE FOR THE FACTS!

SEE OUR ENTIRE LINE AT THE NATIONAL INDOOR COMFORT EXPOSITION — BOOTHS 151-153  
DELTA HEATING CORPORATION, TRENTON 8, NEW JERSEY  
In Canada — Kresno-Stamm • Montreal 24, Canada

**we hear that . . .**

(Continued)

duces cuts and other injuries requiring first aid treatment by about 70 per cent. The gloves — which are reversible so that any two make a pair — are manufactured by C. Walker Jones Co., Philadelphia.

THE NATIONAL SAFETY COUNCIL has published a book, *Showmanship in Safety*, which contains more than 150 ideas for displays, demonstrations, stunts, awards and other devices to arouse interest in accident prevention programs. Contractors and association committees interested may obtain copies from the council at 425 N. Michigan Ave., Chicago 11. Its price is \$2.50. Other training aids available include a series of human relations training films for foremen. The films run 12 minutes each and are available in 16 mm sound movies as well as 35 mm sound slide films.

NEW OWNERS of the Heating Supply & Service Co., Peoria, Ill., are Frank E. Mehrings and Willis F. Mehrings. The company has recently moved into its new location at 101-111 Cass St.

NEW DECALCOMANIAS, suitable for use on show windows, panel trucks, etc., are being offered to heating wholesalers and contractors by Richmond Radiator Co., affiliate of Reynolds Metals Co. The decals may be obtained by writing the company at Box 111, Metuchen, N. J.

**NO. T-12**

Weight — 12 ounces  
Weight Dozen — 17 pounds


Tinner's Riveting Hammer



**NO. T-18**

Weight — 18 ounces  
Weight dozen — 21 pounds

Tinner's Setting Hammer



These hammers are used by workmen everywhere because their weight and balance make jobs easier.

Whitney hammers are accepted because of perfect balance, the leather grip which CANT loosen, and because the sheet metal edge cannot damage the handle neck. They also have one-piece heads and handles that prevent breakage and splintering. Made in both polished and black finish.

Please write us for literature. Carried in stock by all leading jobbers.





**WHITNEY MFG. CO.**  
636 RACE ST. ROCKFORD, ILL.

**Make Stronger Fastenings  
this easy way**





**Hardened  
Masonry Nails**

**DRIVE EASILY** into mortar, cinder blocks, and other soft masonry without pilot holes . . . into pre-drilled holes in harder materials. **HARDNESS and TOUGHNESS** perfectly balanced . . . they drive in straight to stay tight, even under shock or vibration.

**COST YOU LESS** and are much simpler to use than plugs, expansion bolts, other devices. Samples free . . . try them. Ask your P-K Distributor, or write: Parker-Kalon Division, General American Transportation Corporation, 200 Varick St., New York 14.

**PARKER-KALON®  
FASTENERS**



**Kwik-Way DAMPER  
REGULATOR SETS**

ONE SOLID  
HAMMER BLOW  
SETS THE BEARING



**PERMANENTLY  
SECURE,  
RATTLE-  
PROOF!**

No anvil required. Both bearings have retractable bolts for easier installation. Their convenience and time saving characteristics makes them by far the most economical sets when installed costs are considered. See your jobber or write for literature.

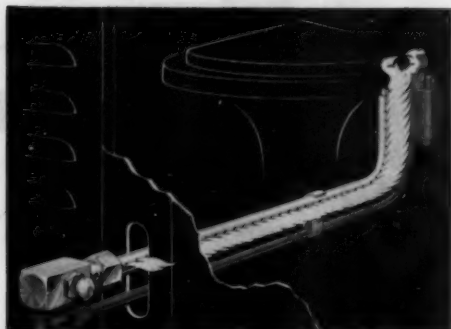


**HART & COOLEY MANUFACTURING CO.**  
366 EIGHTH STREET HOLLAND, MICH.  
IN CANADA: HART & COOLEY MFG. CO. FORT ERIE, N., ONTARIO



## The MODERN LIGHTER TUBE

*With the Slanting Blue Flame*



## OUTSIDE LIGHTING IS HERE!

for FURNACES • WATER HEATERS • BOILERS • INCINERATORS

- ★ **SAFE** as the unit it serves.
- ★ **DEPENDABLE** as the gas supply.
- ★ **SIMPLE** as the scratch of a match.
- ★ **CONVENIENT** as the touch of a button.

**MODERN MATERIALS COMPANY**  
Northville, Michigan

Ask Your Jobber  
for

**DIECKMANN**

**ELBOWS  
and  
SHOES**

*"An angle for every  
obstacle"*

Made in 28, 26 and 24  
gauge steel, hot dipped gal-  
vanized after formation. Also  
in Copper, Aluminum and  
Stainless Steel.

Sizes 1" to 6"—Angles  
10 to 90 degrees.  
Always uniform in size  
and angle

One piece tapered with no  
protruding seams—a perfect  
and tight fit with any con-  
ductor pipe without solder-  
ing.

**THE FERDINAND  
DIECKMAN CO.**

P.O. STATION B,  
CINCINNATI 22, OHIO



Plain Round



Round Corrugated



Square Corrugated  
Style "A"



Square Corrugated  
Style "B"

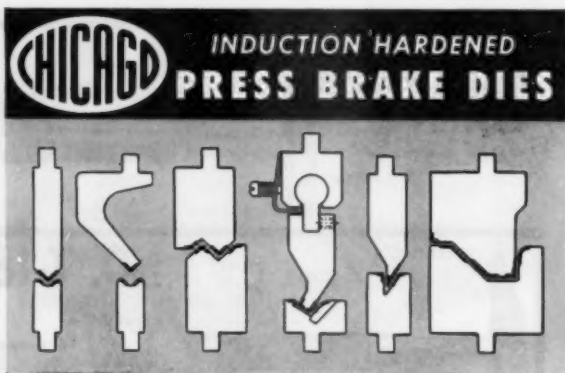
**we hear that . . .**

(Continued)

TWO NEW GAS FIRED furnaces will soon be introduced to dealers by the XXth Century Heating and Ventilating Co., according to J. Garver Kerch, president. The company, founded in 1894, has increased its manufacturing facilities by more than 800 per cent, and its original line of 12 units now includes nearly 50 different sizes and models.

MERCHANDISING MATERIAL being offered by the Thermo-Base Div., Gerwin Industries includes a counter display card showing a 2 ft section of a standard unit and an electric identification sign suitable for use in windows or show rooms. Literature available includes envelope stuffers, data sheets, and a four page circular detailing performance tests.

CROSLLEY AIR CONDITIONERS are featuring a built-in "climate timer." This unit — a 24 hour dial and seven day calendar wheel — is concealed in a panel of the air conditioner. "On" and "off" trippers are set at the desired hours on the dial, and the timer turns the conditioner on and off at the hours specified. In an office, for example, the dial may be set to turn the conditioner on at 8:00 a.m. to prepare the room for occupancy and to turn it off again at 5:00 p.m. The calendar wheel has seven arms, each marked for a day of the week.



Heavy lines indicate hardened surfaces

**for greater die life —**

**at no extra cost —**

**on any make press brake**

Whether it is a simple die for angle bending or the more complex dies for any of the combined bending and forming operations, CHICAGO induction-hardened dies offer bonus performance at no extra cost. Field reports on these dies show better than ten times the useful life of the conventional dies used in press brakes. Get the full particulars on CHICAGO induction-hardened dies for your next press brake job.

Steel Bending Brakes For Over Fifty Years

4901

**DREIS & KRUMP**  
MANUFACTURING COMPANY



7404 S. Loomis Blvd., Chicago 36, Ill.



## we hear that . . .

(Continued)

A screw pin inserted in any one of the arms will prevent the air conditioner from operating on that day. The timers are manufactured by the Tork Clock Co., Inc.

EFFECTIVE this year, the Equipment Division of J. F. Pritchard and Co. became known as the J. F. Pritchard Co. of California. Other divisions continue to be known as J. F. Pritchard and Co.

THE FIBER GLASS Div. of the Ferro Corp. has completed experimentation in basic manufacturing techniques, and a 50 per cent increase in glass fiber capacity output is contemplated, according to a letter addressed to share holders by Robert A. Weaver, chairman of the board for the corporation. Markets have proved to be broader than was originally anticipated.

A NOVEL AIR CONDITIONING service is offered by the "pay-as-you-go" plan of Perfection Stove Co. Under this plan, occupants of hotel and hospital rooms, offices and apartments may rent air conditioning units in much the same way as they now rent television and radio sets. A permanent cabinet is installed in each room and when the tenant requests cooling, a portable unit is brought up and inserted into the cabinet, drawer-fashion. In private homes, cabinets may be installed in various rooms and a single unit transported to different rooms.

FIFTY-TWO YEARS  
OF EXPERIENCE  
ENGINEERING AND  
MANUFACTURING  
VENTILATORS  
IS AVAILABLE  
TO YOU . . .  
ON REQUEST



## AIR IS OUR BUSINESS

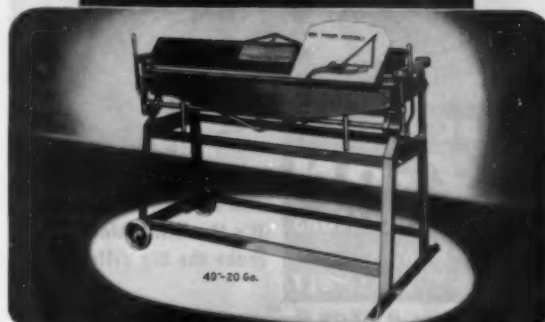
If you have a ventilating problem, Burt Engineers and case histories from thousands of time-tested Burt installations stand ready to help you. Burt holds no brief for any specific type of roof ventilator. The Burt line is complete — with a type and size for any need. If modified or special designs are required, Burt can design and fabricate them — economically. If your problem is specific, give us the details. We'll recommend the solution. If it is general, write for the latest Burt catalog with data and descriptions of Burt's complete line.

FAN & GRAVITY VENTILATORS • LOUVERS • SHEET METAL SPECIALTIES

**The Burt Manufacturing Company**

38 E. South St., Akron 11, Ohio  
Member Power Fan Mfrs. Ass'n

## WHITNEY METAL TOOL COMPANY 39 YEARS EXPERIENCE



## WHITNEY-JENSEN 49" — 20 Ga. BENDING BRAKES

Portable or stationary bending brakes that form a 1/2" flange in 20 gauge mild steel their entire length. Made in two styles — for straight bending or for combination box and pan work as well as straight bending. Combination roller bearing bending brakes — in 18 ga. or 16, 14, 12, ga. capacities — are also available.

WHITNEY METAL TOOL COMPANY  
91 FORBES STREET, ROCKFORD, ILLINOIS

## Just what's wanted in home incinerators!

IT'S CLOG-PROOF, RUST-PROOF  
AND WON'T BURN OUT.....

## The COLE HOT BLAST HOME INCINERATOR



meets homeowners' every demand for top value and performance. Here are just a few of the Cole features:

- Economical gas operation with exclusive, patented, air-jet combustion. Genuine refractory tile lining . . . rust-proof, clog-proof, permanent.
- Smokeless and odorless.
- Dependable disposal of every scrap of food, however wet.

Write today for complete specifications of both Deluxe and Standard Models.

**COLE HOT BLAST MFG. CO.**  
3817 S. RACINE AVE. CHICAGO 9, ILLINOIS



**TIME SAVING  
E-Z-ON  
DAMPER REGULATORS  
PERMIT  
INSTANT ASSEMBLY**

(Shown—Tail piece of #27 E-Z-ON)

**It's the little things that  
make the Big difference!**

Advanced design of E-Z-ON damper regulators permits on-the-job Assembly with only a hammer — no drilling — no rivets. This 16 gauge steel regulator is simply positioned on the damper by sliding it over the scribed center line. The E-Z-ON accurately stays in position until a hammer blow drives the sharp prongs through the damper (E-Z-ON prongs will pierce 22 gauge metal.)

**E-Z-ONS PROVED MORE PROFITABLE**

Job Histories prove that your apprentice or journeyman can save two-thirds of their damper makeup time with E-Z-ONS.

**M. A. GERETT Corp.**

724 W. Winnebago, Milwaukee, Wis.

Stocked in CANADA by  
**THERMIDAIRE CORP.**  
7-9 Cumberland Street, Toronto

**STYLE & SIZE**  
Famous E-Z-ON standard design No. 27  
Solid end tail piece, threaded head piece and wing nut —  $\frac{3}{8}$ " bearing.  
Superior E-Z-ON "Snap-Tite" Design No. 29  
Tail piece with retractable snap and bearing, threaded head piece and wing nut —  $\frac{3}{8}$ " bearing.

**FLANGES THE DUCT  
with Amazing Speed!**

Less than 5 seconds on short and lighter pieces . . .  
Slightly longer on bulkier pieces

**MAKES PERFECT  
DRIVE-CLEATS TOO!**

The ONLY tool that does both.  
A complete drive cleating tool . . . no set-up time . . . no adjustments.  
Handy to take out to the job when not needed in the shop. Turns idle time into production time. Flanges any square duct up to 20 gauge. Quickly pays for itself in time, material and labor savings.

**PERFECT  
DRIVE CLEATS**  
fit the duct without  
the use of a screwdriver.

**TREMENDOUS SAVINGS**  
in erection time and labor.

No. 12 Smith's Cleat Bender  
(12" wide) . . . \$46.20\*

No. 18 Smith's Cleat Bender  
(18" wide) . . . \$72.60\*

\*F.O.B. Waukegan, Illinois  
Prices subject to change  
without notice

**R. E. SMITH**  
1124 Elizabeth Avenue • Waukegan, Illinois

**appointments . . .**

CHESTER S. STACKPOLE as general sales manager of the Union Asbestos and Rubber Co.'s Heating and Cooling Div. Mr. Stackpole was formerly vice president and general sales manager of the Airtemp Div., Chrysler Corp., and vice president of the Williams Div., Eureka-Williams Corp. He is in charge of sales and marketing of new heating and cooling products. His headquarters are in Chicago.



Wallace J. Hoeing



Nils D. Sellman



Patrick B. Krapfl

WALLACE J. HOEING as sales manager of the air conditioning division of Servel, Inc., succeeding H. R. Nielsen, who recently became manager of the division. For the past three years Mr. Hoeing has been regional air conditioning manager in the eastern region. Nils D. Sell-

**Sell the COMPLETE LINE of**

**Majestic  
DOUBLE-DUTY  
Incinerators**

- 3 Models of New, Outstanding Design
- 3 Basement Styled Units (priced for quick sales)
- 6 Designs for More Convenient Living



Majestic Incinerators are the most complete line of home disposal units. Six models, each featuring Majestic's patented down-draft, provide incineration for every home at economical price levels. Exclusive Jet-Air action and internal draft control on Majestic's new Model 10 series offer unique sales and safety features. Add this profit-making line to your business! Your jobber can give you prices and additional details, or write Majestic for your supplier's name and address.

**The Majestic Co., Inc.**

110-A Erie Street

Huntington, Indiana

## appointments . . .

(Continued)

man has been named to fill the position left vacant by Mr. Hoeing's promotion. Mr. Sellman will maintain headquarters in New York. He has been with the company since 1947, and prior to his recent promotion was southern regional air conditioning manager. Patrick B. Krapfl, former air conditioning zone manager, succeeds Mr. Sellman as southern regional air conditioning manager, with headquarters in Atlanta. G. Howard Christine has been appointed product manager of the room air conditioner division.



Keith J. Evans



Lowell M. Bennett

KEITH J. EVANS as director of marketing and public relations for the five divisions of Joseph T. Ryerson & Son, Inc. Mr. Evans, who has been advertising and sales promotion manager since 1917, will continue in overall charge of market research, sales analysis, sales promotion, advertising and public relations. He is succeeded

## MOREY FLOAT VALVES

Both valves operate either horizontally or vertically

WITH STAINLESS STEEL SEAT AND COMPRESSOR TRIGGER BRASS BODIES



LIST PRICE  
**\$1.60** each

Large Size or Small

Stainless steel orifice, brass wing nut and bolt. Neoprene gasket. High impact Neoprene Styrene float. STOCKED BY JOBBERS — 12 valves per carton, 6 cartons per case. Subject to standard jobbing discounts.

### FLOW DATA

Large Valve: 240 gallons per hour at 60 p.s.i.

Small Valve: 190 gallons per hour at 60 p.s.i.

Will work in 1 inch of water!

Used as original equipment on evaporative coolers of outstanding reputation. Excellent on poultry and small stock troughs as well as cooling towers!

**DAN MOREY** 814 South Robertson, Los Angeles 35, Calif.

## Save Time... Labor... Material with BEVERLY metal cutting SHEARS

throatless  
SHEARS

Make any cut—straight, irregular, curved. Exclusive design permits turning work any direction while cutting. 4 models—cap. to 3/16".



Inside SLOTTER

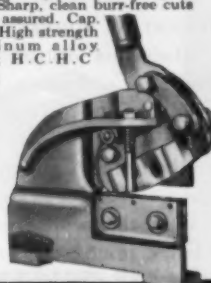
Makes cuts up to 6" inside edge of sheet. Sharp, clean burr-free cuts always assured. Cap. 16 ga. High strength aluminum alloy body; H.C.H.C. blades.



slitting SHEAR

New "SS" Series—easier cutting with compounded linkage. 3 models—cap. to 1/8"; trimming capacity to 1/4" mild.

See your Beverly Distributor. Write for FREE illustrated Bulletin.



**Beverly SHEAR MFG. CO.**

3020 W. 111th STREET • CHICAGO 43, ILLINOIS

## WEBCO

*the portable*

## SHEET METAL BENDING BRAKE



The WEBCO brake offers the Slip End, Sliding Folding Fingers, and many other important features. The WEBCO will make bends up to 52°. Write for detailed information to:

**HALLMOR INC.**

McMURRAY ROAD  
BRIDGEVILLE, PA.



## appointments . . .

(Continued)

in his former post by Lowell M. Bennett, formerly sales promotion manager. Mr. Bennett joined the company last year.



Robert M. Johnke   Stephen J. Cheney   L. C. Binda

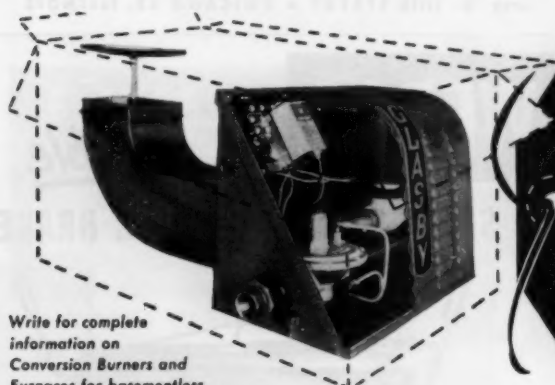
ROBERT M. JOHNKE as manager for the newly opened Philadelphia district sales office of the Janitrol Div., Surface Combustion Corp. Mr. Johnke was formerly sales representative in the Long Island area. The new office, located at 401 N. Broad St., will serve dealers in southern New Jersey, Delaware and eastern Pennsylvania. Working with Mr. Johnke as a sales representative in the new territory is Stephen J. Cheney. Mr. Cheney joined the firm in 1953. The Federal Corp., formerly the Federal Supply Co., 120 E. Main St., Okla-

homa City, has been appointed distributor for Janitrol winter and summer air conditioners in the state of Oklahoma. L. C. Binda has been named to direct Janitrol sales activities for Federal.



R. D. Strickler   C. B. Lytton   F. T. Locey

R. D. STRICKLER as director of sales for the Lennox Furnace Co. In his new position Mr. Strickler will coordinate the activities of the advertising, merchandising and sales departments throughout the organization. He will maintain headquarters in Columbus. C. B. Lytton succeeds Mr. Strickler as sales manager of the Columbus office. Mr. Lytton has been with the company since 1946. F. T. Locey, formerly assistant sales manager of the Columbus office, has been promoted to the post of division manager. Allen Georgenson succeeds him as assistant sales manager.



Write for complete information on Conversion Burners and Furnaces for basementless and semi-basement homes.

## GLASBY GAS CONVERSION BURNER

A package unit that will convert heating units without expensive construction or follow-up service calls. Quick profit-maker requiring no heavy investment. Factory assembled, tested and guaranteed. Models cover 85,000 to 300,000 BTU's.

J. P. **GLASBY** MFG. CO., Inc.  
Belleville 9, N. J.

## REPAIR PARTS FOR

STOVES, OIL STOVES, FURNACES AND BOILERS  
. . . . REPAIR SERVICE ON A.P. CONTROLS

— Distributors of —

## HEATING & AIR CONDITIONING SUPPLIES

Asbestos Paper - Pipe Covering - Duct Insulation  
INSULATION FOR ALL NEEDS

## A. G. BRAUER SUPPLY CO.

THE COMPLETE HEATING SUPPLY HOUSE  
2100 WASHINGTON AVE.   ST. LOUIS 3, MO.

SAMPLES FREE

**SODER STAINLESS  
STEEL RAPIDLY**



AT IT SINCE '93

**FLUXES**

**SODERING  
BRAZING & WELDING**

**ALLEN**

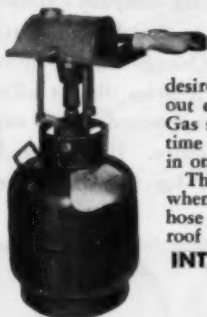
L. B. ALLEN CO. INC.   Chicago 31, Ill.



**INSTANT  
LIGHTING**

**Insto-Gas**  
T M REG. U S PAT OFF

## SOLDERING IRON HEATER



Sheet metal contractors can now have hot soldering irons in 2 minutes and with Insto-Gas they can be kept at the desired temperature all day long without even looking at the heater. Insto-Gas saves 40% on fuel cost and enough time to pay for the entire equipment in one week's operation.

The Insto-Gas soldering iron heater when attached to the cylinder by 50-ft hose can be operated on a scaffold or roof without moving the cylinder.

### INTERNALLY FIRED SOLDERING IRONS

These Insto-Gas soldering irons are designed for continuous operation with no stopping to change irons. Made in two sizes; the No 1-S (2) for fine work and the No 2-S (5) for heavy soldering.

Listed by Underwriters Laboratories and Factory Mutuals Laboratories

Write For Free Folder  
INSTO-GAS CORPORATION  
DETROIT 7, MICHIGAN



## "CORRECT PRACTICE in OIL HEATING"

**NOW AVAILABLE TO YOU!**

**A complete reprint of the valuable series**

**by J. J. Mirabile**

This practical series covers every angle of oil burner work, including arrangement of shop . . . stocking of parts . . . record-keeping . . . installation procedures . . . the handling of crews . . . how to make heating surveys . . . how to size combustion chamber . . . how to install thermostat . . . how to start the burner . . . how to use testing instruments . . . and how to operate a service department. It contains, as well, a complete list of causes and cures of oil burner troubles that will serve as a reliable guide in making service calls.

Every shop handling oil burner jobs should own this book. Full size, 8 1/2 by 11 inches — 57 pages of practical helps. Send \$1.00 for a copy to the address below.

**KEENEY PUBLISHING COMPANY**

**6 No. Michigan Avenue**

**Chicago 2, Ill.**

## The Original LAUND-R-VENT

For automatic clothes dryers. Friction free. Rust and ice proof. Built entirely of aluminum. 3" and 4" sizes. Prices start at \$1.95. Complete kits available.



## Best Performance Best Prices

### Standard Round DRAFT CONTROL

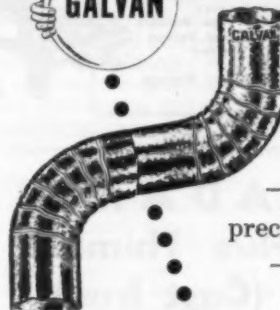
Low priced gate control for oil burners and stokers. Exclusive friction-free knife edge bearings. Stock sizes 7" to 12". Also available 4" to 6" sizes for stove and space heaters. Prices start at \$1.83 for 7" size.



**COLE-SEWELL ENGINEERING CO.**  
2288 UNIVERSITY AVE., ST. PAUL 14, MINN.



*It's Magic  
the way  
they fit!*



## GALVAN ELBOWS

— are proof of  
precision production  
— and careful  
inspection

★ They're  
mighty  
profitable  
to stock

*Ask Your Jobber*

**GALVAN**  
*Manufacturing Co.*  
New Albany Indiana

## appointments . . .

(Continued)

RICHARD FLEMING as sales engineer in the Philadelphia metropolitan area for Thatcher Furnace Co. John Sheehan will cover the central New Jersey area, and Edward Hanley will handle sales in northern New England.

John E. Price has been named manager of the company's Chicago district. He will headquarter in the offices of the F. W. Sieffert Co., 2004 W. Lake St., where a complete stock of Thatcher heating and cooling equipment is maintained.



John E. Price



Joseph A. Brainard



Ora E. Johnsonbaugh



Mort Zimmerman

JOSEPH A. BRAINARD as sales representative in north-eastern Ohio and in parts of Pennsylvania for the Peerless Electric Co., Fan and Blower Div. Mr. Brainard

was previously associated with Air Controls, Inc. and Bishop and Babcock Mg. Co.

IVAN STEPNIICH as sales engineer for the new Columbus, Ohio, office of Penn Controls, Inc. Five other sales engineers recently appointed are: Richard C. Young and David F. Belknap, to work out of the company's Goshen, Ind., office; Joseph B. Chomel, to the Atlanta district office; Albert J. Walter, to the Chicago district office; and John W. Clark, to the Los Angeles district office.

Ora E. Johnsonbaugh has been appointed service engineer to work out of the Goshen office. He replaces K. W. Fisher, now district manager for the Dallas area.

MORT ZIMMERMAN as residential air conditioning sales manager for Carleton-Stuart Corp., distributor for Carrier Corp.

## ...for reliable results — use **RELIABLE** products



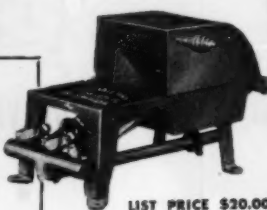
SOLDERING TORCH  
No. 69 LIST PRICE  
\$6.50

SOLDERING TORCH FOR TIN  
AND RADIATOR SHOPS

### THE RELIABLE LINE CONSISTS OF:

- Industrial Bunsen Burners
- Special Bunsen Burners
- Laboratory Bunsen Burners
- Urn Burners
- "Many Purpose" Burners
- Bench Soldering Furnaces
- Combination Bench Furnaces
- Melting Furnaces
- Ring Burners
- Drilled Pipe Burners
- Mixers and Valves
- Hand Torches
- Ladles
- Valves and Fittings
- Melting Pots

No. 2 S BENCH  
FURNACE



LIST PRICE \$20.00



No. 62 A  
SINGEING TORCH  
LIST PRICE  
\$9.50

PREHEAT MELTING &  
SINGEING TORCH

◀ ◀ GENERAL PURPOSE  
BENCH FURNACE

SPECIAL BURNERS MADE TO ORDER

ILLUSTRATIVE CATALOGUE DESCRIBING  
COMPLETE LINE UPON REQUEST.

**RELIABLE GAS PRODUCTS CO.**

419 H AVENUE NW, CEDAR RAPIDS, IOWA



## ADAMS Flue Thimble (Cast Iron)

Adams Cast Iron Flue Thimbles  
Insure Permanence, Tighter Fit,  
Better Draft.

Sizes 4 to 12 inches  
Buy Adams Known Quality

**THE ADAMS COMPANY**

Bridge Street • Established 1883 • Dubuque, Iowa



**PROVEN PERFORMANCE!**

All Galvanized, Welded Construction  
Noiseless Precision Bearings  
Perfectly Balanced Rotor Head

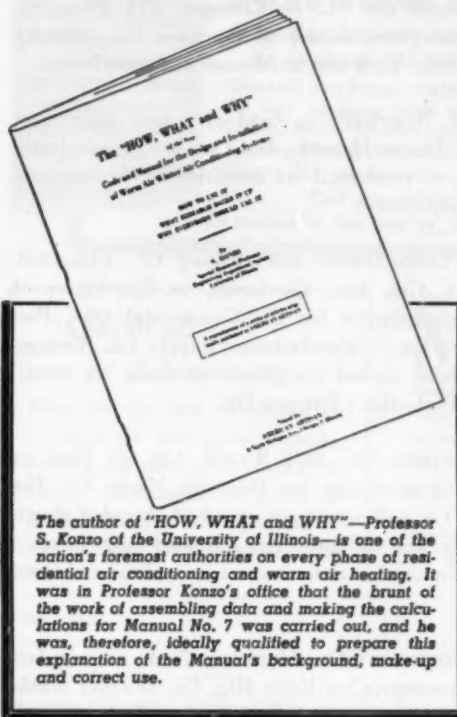
These outstanding ventilators, made by Greenheck Bros., are built for long, trouble-free service. And they are performance proven. Buyers are enthusiastic about their rugged construction and efficient operation.

**GREENHECK**

SCHOFIELD,  
WISCONSIN

Write today for  
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The author of "HOW, WHAT and WHY"—Professor S. Konzo of the University of Illinois—is one of the nation's foremost authorities on every phase of residential air conditioning and warm air heating. It was in Professor Konzo's office that the brunt of the work of assembling data and making the calculations for Manual No. 7 was carried out, and he was, therefore, ideally qualified to prepare this explanation of the Manual's background, make-up and correct use.

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- The New Manual Simplifies Engineering
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- How to Adjust and Balance a Warm Air Winter Air Conditioning System
- Reference List
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- HOW to Use It Correctly
- WHAT Experience Is Behind It
- WHY Every Dealer Should Use It

## "The HOW, WHAT and WHY of the

### Code and Manual for the Design and Installation of Warm Air Winter Air Conditioning Systems"

by S. KONZO

Special Research Professor—Engineering Experiment Station, University of Illinois

75 Pages — 8½" x 11" — \$1.00

Users of Manual No. 7 will find this "HOW, WHAT and WHY" booklet invaluable toward acquiring a clearer understanding of the Manual and properly applying it in the planning and installation of warm air winter air conditioning systems. Published originally as a series of articles in the magazine AMERICAN ARTISAN, this clear and comprehensive analysis has proved so helpful to dealers everywhere that now, in response to a wide demand, it has been reproduced in full in this new 75-page booklet "HOW, WHAT and WHY."

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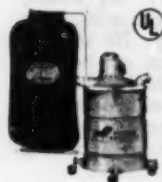
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RICHARD W. NORTHRUP as head of a new department formed by Drayer-Hanson, Inc., to handle wholesale distribution of residential air conditioning, heating and ventilating equipment.

OHIO AIR CONDITIONING and Heating Co., Cleveland, and Perfect Aire, Inc., Cincinnati, as distributors of room air conditioners for the Commercial Div., Perfection Stove Co. Manufacturers Supply Co., Youngstown, has been named distributor of room air conditioners for Perfection's Furnace Div.

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HENRY KUHLMAN, former heating department manager of the Crane Co.'s New York branch, as field representative covering district one of the Crane Co. Heating Div. Other new field representatives and their districts are: John J. Millner, district two; Fred J. Maurer, district three; C. Earl MacNally, district six; Carl J. Shine, district four; and William J. Barsch, district seven.

MAURICE L. CARLSON as special representative for the southern district office of United States Radiator Corp. With headquarters in Dallas, he will cover Florida, Alabama, Mississippi, Louisiana, Oklahoma, Arkansas, Texas, Arizona, and New Mexico.

## Obituary

**Hugh F. Munro, Sr.**

HUGH F. MUNRO, SR., died February 13, 1954, at the age of 87. He was the founder of the firm of Hugh F. Munro & Sons, Inc., Philadelphia, contractors and consultants in general industrial metal work. He leaves a family of three sons, a daughter, and three grandsons.



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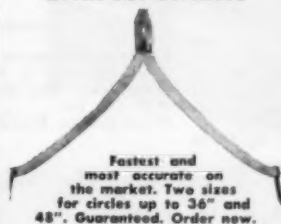
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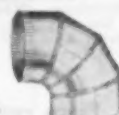
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